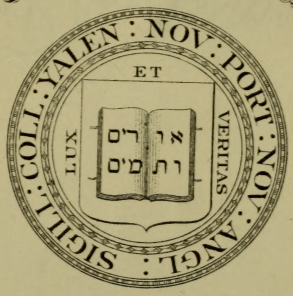
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W. H. Thomson

THE

PATHOLOGY, DIAGNOSIS, AND TREATMENT

OF THE

DISEASES OF WOMEN

BY

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BY

HARRY MARION-SIMS, M.D.

ATTENDING SURGEON TO ST. ELIZABETH'S HOSPITAL, NEW YORK, ETC.

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THE

PATHOLOGY, DIAGNOSIS, AND TREATMENT

OF THE

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CHAPTER XXXII.

AMENORRHŒA.

DIAGNOSIS of Nature of AMENORRHŒA.—(*a*) Cases in which Menstruation is not, and never has been present—The various Causes of this Condition; Defective Formation or Absence of the Organs concerned; Retardation of Puberty; Absence of Secretion; Retention; Pregnancy—Diagnosis of these one from the other. (*b*) Imperfect Establishment of Menstruation. (*c*) Cessation or Suppression of Menstruation—Causes of this Condition: Pregnancy, Suppression, Retention, Premature Cessation of Catamenia.

TREATMENT OF AMENORRHŒA.—Treatment for Delay of Puberty or Defective Development—Treatment for Disorder of General Health with Amenorrhœa—Emmenagogues, etc.—Chlorosis and Amenorrhœa—Vicarious Menstruation—Treatment of SUPPRESSION—Acute Form—Means to be Adopted—Emmenagogues; Mechanical Stimulation of Uterus—Treatment of Menstrual RETENTION—Cases of Absence of Vagina—Cases of Imperforate Hymen—Cases of Imperforate Os Uteri.

Under the term "amenorrhœa" will be considered those cases in which menstruation is either absent altogether, or in which the quantity of discharge is less than it should be. The term is a very vague one, and simply defines the presence of a condition which may be symptomatic of many widely differing disorders or physiological changes in the generative organs.

The series of cases which may be first examined are those in which

(*a*) MENSTRUATION IS NOT, AND NEVER HAS BEEN, PRESENT.

The first point which it is necessary to determine, in endeavoring to ascertain the cause of the non-appearance of the menstrual secretion, is: Are the organs essential to the performance of this function actually present? In cases of *congenital absence of the ovaries* no menstrual discharge is likely to take place; and the same holds good if, the ovaries being present, the *uterus* be absent. Cases coming under either of these categories are rare. In cases of absence of the ovaries the external signs of puberty are wanting: the breasts, under such circumstances, would be small and undeveloped, and absence of sexual desire and of other feminine characteristics, might be expected to be observed. *Absence of the uterus*, or what practically amounts to the same thing—extremely rudimentary formation of this organ—is less rare than absence of the ovaries. No absolutely distinctive signs of the absence of the uterus can be given: a careful examination only is the means of determining the diagnosis. From the facts which have come before me I infer that there is no absolute relation between the outward and the internal conformation. That is to say, the external generative organs may be normal, while the internal ones (*e.g.*, the uterus) may be very small and imperfectly developed.*

Absence of any one of the parts of the generative apparatus just referred to—of the ovaries, uterus, or vagina—is rare; but it is not so uncommon to find that the uterus and ovaries, although actually present, retain their infantile conditions; that degree of development necessary to the establishment of the catamenial function failing to take place. (See chapter on Malformations, etc., of the Uterus.) There may be no defective condition of the bodily health, and yet from month to month there is no appearance of the discharge. The "proper" age is gone by, and the friends of the patient become seriously uneasy. In a few cases of this kind the vagina is healthy, the uterus present; the only thing wanting, in fact, is the discharge, the cause being a slightly defective condition of the development of the

* The subject of the congenital defects, malformations, etc., of the uterus, has been elaborately treated by Kussmaul in his work "Von dem Mangel, der Verkümmerung und Verdopplung der Gebärmutter," etc., 8vo. Würzburg, 1859. In this work there will be found a very large number of illustrative cases.

uterus; this organ being found normally constituted, but retaining to too great a degree its infantile condition. Sir J. Y. Simpson called particular attention to the connection of this condition with "amenorrhœa." * The signs of ovarian activity are either absent, or present only in a very slight degree. These cases give no occasion for anxiety as regards the immediate effect on the patient; but the prognosis may be serious as regards her matrimonial prospects. It is, in a word, uncertain what course will be taken with the generative organs—whether they will remain in this functionally idle condition, or not; and, if not, when and how the appearance of the secretion will take place.

For the purpose of ascertaining, firstly, whether the vagina and uterus be actually present, and secondly, if so, whether they present or not that imperfect degree of development alluded to, it will be necessary to make an examination of both external and internal generative organs.

It will be important to determine the question, *Is puberty retarded?* With reference to the arrival of puberty, we have first to look for the *outward* evidence of the same in the form, development, etc., of the body generally, and of the external sexual organs in particular; we have to seek for *internal* evidence of the functional activity of the reproductive organs, in the symptoms or signs described under the term "menstrual molimen" (see Phenomena of Menstruation). It must not be forgotten that the menstrual molimen does not indicate anything more than that the ovaries are present. The uterus may be so defectively formed that menstruation is not possible, although the ovaries are, so far as circumstances admit, exercising their normal function.

If the patient exhibit other characteristic evidences of having arrived at puberty, and no menstrual discharge has been observed,

Either (1) *There is no secretion of the menstrual fluid;*

Or (2) *The menstrual fluid is secreted but not evacuated—retention;*

Or (3) *The woman is pregnant.*

Pregnancy.—It is possible for a woman to become pregnant in whom no catamenial discharge has ever been observed, as several well-authenticated cases prove.†

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* *Med. Times and Gazette*, 1861.

† Montgomery, *op. cit.*, p. 77.

In cases of *retention of the catamenia*, the ovaries and the uterus discharge their functions regularly, but there is no outlet for the secreted fluid. The uterus becomes enlarged, an abdominal tumor is felt, and the woman is often, under these circumstances, supposed to be pregnant. The ordinary history of such a case is as follows: Puberty arrives, and with it the indications of activity on the part of the generative organs, and recurrences of the menstrual molimina are observed from month to month. The pain and discomfort at these periods are at first inconsiderable, but after a time these symptoms increase in intensity; a sense of fulness and weight in the pelvis remains also in the intervals between the menstrual attempts. The symptoms become gradually more severe in character, the patient is never thoroughly easy and comfortable. The bowels are constipated; there are frequency of micturition, permanent and severe pains in the loins, all periodically increased in severity. The health fails, and the patient passes from a condition of perhaps robust health to the opposite extreme; the appetite is lost, and nutrition greatly interfered with. And now the uterus, increasing in size from the presence of the retained catamenial secretion, forms a tumor readily detected in the hypogastric region: in some cases both vagina and uterus are distended by the retained secretion. The patient is sometimes considered to be pregnant, and the supposition that pregnancy exists is apparently perhaps confirmed by the presence of those gastric symptoms usually associated with pregnancy, such as vomiting and nausea. The breasts may also sympathize, and become painful and tumefied. The intensity of the symptoms observed varies much in different cases; and the degree to which the uterus becomes distended is open likewise to great variation; it would appear that in some instances a portion of the menstrual secretion is from time to time absorbed, and a large accumulation thus prevented. When the distension of the uterus reaches a certain point, pains in the back, resembling labor pains, and doubtless due to contractions of the uterus, are observed.

The diagnosis is arrived at by a consideration of the symptoms and by physical examination. The characteristic points, so far as the symptoms go, are—the presence of puberty; generally complete absence of menstrual discharge; presence of periodic attacks gradually increasing in severity, of the kind already described; a fulness in the pelvic region,

which goes on increasing from month to month, and which gives rise to difficulties in micturition and defæcation; all these symptoms, be it observed, occurring soon (within the first year or so) after puberty has arrived. If the woman be married it will, in the large majority of cases, but not in all, be found that sexual intercourse is performed with difficulty, or that it cannot be performed at all. The physical signs are—presence of a tumor in the hypogastric region, discoverable by examination of the abdomen; and the want of an outlet for the menstrual fluid, discoverable by an examination of the vagina; the existence of atresia of this canal, imperforate hymen, or closure of the canal of the cervix uteri. The rare case of absence of the uterus, the ovaries being well developed and in activity, is to be distinguished from retention by the fact that the menstrual molimina, though present, are imperfectly marked and wanting in intensity; in addition to which, a simultaneous examination through the bladder and rectum would fail to detect the uterus in its normal position. Practically this latter question is hardly likely to arise.

The only other condition to be eliminated from the consideration is non-secretion of the catamenial fluid. Here the menstrual molimen (possibly) and puberty are present, but no discharge appears. If there be an absence of all signs of accumulation in the uterus, of symptoms of fulness and pressure, and of the physical signs before referred to as observable when the case is one of retention, these are indications that the case is not one of the latter description. The examination *per vaginam* detects no atresia of this canal, and sexual intercourse is not impeded. It is not sufficient to determine that the vaginal canal is free; for although the retention is mostly due to obstruction in this situation, the obstruction may be situated in the cervical canal of the uterus itself. The latter condition existing in connection with retention is, however, very rare. The causes of non-secretion will be considered presently.

(*b*) IMPERFECT ESTABLISHMENT OF MENSTRUATION.

There is a class of cases also very frequently presenting in practice in which a discharge has occurred on one or more occasions, but very slight in amount, and only enough to show that menstruation is possible.

It is in connection with these cases of imperfect estab-

lishment of menstruation that a light-colored discharge appears—replacing in a manner the catamenial flow—at intervals. This spurious form of menstruation may occur, for two or three or more periods before the normal flow occurs, even in cases when there is nothing evidently abnormal present. It is in such cases also that the so-called vicarious menstruation may occur; and the diagnosis is especially interesting, not less from the frequency with which they occur in practice than from their actual importance.

(*c*) SUPPRESSION OR CESSATION OF MENSTRUATION.

There are several conditions capable of producing a cessation of menstruation, and the function may be suddenly and completely put an end to, never to appear again, or the cessation may occur more gradually, but still before the proper age for its termination has been reached. And, again, menstruation may be temporarily arrested, returning after some months' cessation. Again, there are many cases in which menstruation is not exactly arrested, but in which the discharge is exceedingly scanty, and wanting in the ordinary physical qualities of healthy menstruation.

Before discussing the varieties of amenorrhœa of a pathological character it will be necessary to describe that physiological suppression of menstruation due to pregnancy.

Suppression of Menstruation due to Pregnancy.—"We are," says Dr. Montgomery, "quite justified in adopting, as a general rule, that in healthy women, whose menstruation has been established and continued regular, and who are not nursing, conception is followed by a suppression of the menstrual discharge at the next return of its period; but then this suppression may not so occur; and, on the other hand, it may happen from a variety of other causes altogether unconnected with pregnancy."

The statements of the patient must be received with caution. "Nothing," says Casper,* "is easier for a person who is desirous of simulating pregnancy than to declare that menstruation has ceased for such and such a time; and it is only by a favorable accident that an examination is made

* "Practisches Handb. der gerichtlich Medicin. Biolog. Th." Berlin, 1858, p. 201.

at the catamenial period, and the imposition thus discovered." In like manner, menstruation is now and then simulated, in order to avert the suspicion of pregnancy, and artificial staining of the linen with blood has even been had recourse to, in order to carry out the deception. The actual value of menstrual suppression as a sign of pregnancy amounts to very little. Suppression of the catamenia for three or four months not unfrequently occurs from causes altogether independent of pregnancy. In young women only just arrived at puberty, the interval is now and then as long as this before the function is thoroughly and completely established; and it is not very uncommon for the menses to be suppressed just after marriage, for a month or two, without pregnancy taking place.

If pregnancy have existed for more than four months, other data for diagnosis—enlargement of the uterus, mammary changes, etc., are available, and should be sought for. In women who have an object in concealing the fact of the existence of pregnancy, the absence of the catamenia for two or three periods is, however, to be regarded as a suspicious circumstance, and should be sufficient to put the practitioner on his guard, although it need hardly be observed that this suspicion should be confined to himself at this stage of the inquiry. The presence of "morning sickness," associated with catamenial suppression, would make the suspicion of pregnancy a little stronger; but some pregnant women are never "sick." As a rule, the suspicion of the existence of pregnancy may be dismissed if, after four or five months, the physical signs of pregnancy, such as enlargement of the uterus, etc., do not show themselves; but even this rule is one to which there are exceptions. It now and then happens that the catamenia are suppressed for two or three months, and the woman *then* becomes pregnant. In such a case the physical signs just alluded to would not, of course, present themselves at the end of the four or five months from the date of the suppression, and an erroneous inference might thus be drawn. In some rare recorded instances, women have been known to present the peculiarity of never conceiving until after three or four months' previous suppression. Again, pregnancy may occur at a somewhat advanced period of life, and when the menstrual phenomena have for some years altogether ceased. The absence of menstruation in a woman over forty years of age, for a period varying from two to nine

years, *may* be followed by pregnancy at the end of that time.*

More frequently, perhaps, the fact of the menses having ceased is made the basis of the conclusion that pregnancy exists by women who desire to be pregnant, and who, somewhat advanced in life and arrived at "a certain age," interpret facts according to their own wishes. Here embarrassment is not seldom produced; women at this age are ready with all those presumed corroborative facts with which their own experience or the experience of their friends has made them familiar; and it is only by a rigid adherence to the rule to take nothing which is simply asserted for granted, that the practitioner will prevent himself from being led to form equally sanguine expectations with the patient herself. At the time when the functions of reproduction are about to come to an end—the mere cessation of the menses is of less value as a sign of pregnancy than at any other period of life. It is the fact, that, at this period, a suppression for two or three months, the discharge then returning, often rather profusely, is not at all unusual.

The absence of the catamenia, then, must never be considered as a proof of pregnancy; but in many cases it is of infinite service in directing attention to the view of its possibility. Examination of the abdomen, the vagina, and the breasts, gives more decisive information; and on the data thus afforded only can anything like a positive opinion be given.

Presence of Menstruation during Pregnancy.—In a certain number of cases, even when the patient is pregnant, a discharge more or less resembling the menstrual discharge may occur from month to month. Elsässer † has collected nearly fifty cases, in which a discharge of this kind was noticed during pregnancy. Thus, in eight cases a discharge occurred once during pregnancy, in ten cases twice, in one twice or three times, in eleven cases three times, in four cases four times, in six cases five times, in five cases eight times, and in two cases nine times during pregnancy. And cases are related—one I have myself placed on record ‡—

* See Montgomery, *op. cit.*, for several interesting cases of this kind, pp. 88 *et seq.*

† Quoted from Henke's "Zeitsch." Bd. 73, p. 402, by Casper, *op. cit.*, p. 202.

‡ *Lancet*, vol. ii. (1858), p. 91. See also a case, not, however, precisely of the same kind, recorded by me in vol. viii, p. 221, of the "Obst. Trans."

in which patients habitually menstruate only when pregnant. [Dr. J. Marion Sims has seen a case in which menstruation continued regularly and normally up to the eighth month of pregnancy.]

Extra-uterine Pregnancy.—There are many circumstances which may give rise to a discharge from the uterus during pregnancy, such as cancer, iuflammatory or congested conditions of the os, etc. An important class of cases, however, is that in which there is an occasional sanguineous discharge from the uterus, which may or may not simulate menstruation, in women the subject of *extra-uterine* pregnancy. A rather common symptom in cases of extra-uterine pregnancy is sanguineous discharge occasionally occurring during the two or three months immediately subsequent to the date of the supposed impregnation. Thus a woman six weeks after the date in question has a hæmorrhage. This may be due to abortion, to retardation of menstruation, or to extra-uterine pregnancy. The points to which attention should be directed, if extra-uterine pregnancy be suspected, are the following: Unusual pain at a particular situation in the pelvis; detection, by bi-manual examination, of a tumefaction corresponding with the seat of the pain—an increasing enlargement. If the patient continue to present signs of pregnancy, while hæmorrhage recurs occasionally, this conjunction of signs is to a certain extent confirmatory of the suspicion. And supposing the patient to be suddenly seized, at the end of two or three or four months, with symptoms of internal hæmorrhage (see Pain referable to Generative Organs), a history such as that indicated, together with the symptoms of internal hæmorrhage, point to the conclusion that the case is one of extra-uterine pregnancy and rupture of the cyst, or of some vessel in its neighborhood. In a remarkable case of extra-uterine (tubal) gestation, related by Mr. Cheesman,* the patient went beyond the full term, never even suspecting her pregnant condition, and deceived by the appearance of what she considered to be a menstrual discharge. There was a discharge from the vagina every five or six weeks, chiefly in clots. The case is the more remarkable that the patient had previously had four children.

Lastly it must be stated that cases in which menstruation, or, at all events, a discharge resembling it, is present

* *Lancet*, Sept. 14, 1861.

for two or more periods, *coincidently with pregnancy*, the pregnancy ending quite naturally, are not quite so rare as is usually stated.

The diagnosis between suppression of the catamenia of a pathological nature and the kind of suppression just alluded to, in which there is a physiological reason for it, is occasionally difficult when the catamenial discharge has been absent only for two or three periods; for the pathological suppression is sometimes accompanied with some of the general symptoms of pregnancy, as morning sickness, swelling of the breasts, etc., when pregnancy is certainly not present. This form of suppression very closely simulating pregnancy is noticed by Denman and Montgomery as frequently occurring soon after marriage; and Montgomery characterizes such cases as always liable to great doubt, and extremely embarrassing to the practitioner. In an instance which came under my own observation, a like obscurity surrounded the case, but the patient had been married for several years. Under such circumstances the decision must be postponed, and a guarded opinion given.

Another case which is often a source of embarrassment is presented to our notice in young women in whom the catamenial function has only recently been set up; and here we may be in doubt whether the absence be due to suppression, to pregnancy, or to other causes which have been already considered. The absence of a known cause for suppression, the fact that the patient continues in good health, and the absence of signs of pregnancy, would lead to the inference that the case was one of retarded puberty (the age of the patient admitting of this hypothesis) rather than one of suppression in the sense of the word in which it is now used.

Delay in the Appearance of Menstruation (*Amenorrhœa*) *from Constitutional Causes.*—In this class of cases the uterus and other organs are well formed up to a certain point, but fail in undergoing that further degree of change or increase in size which is usually observed at the age of puberty—the advent of puberty, in other words, is retarded. This retardation of puberty is, in most cases, the result of disease, of which we very shortly find other evidences present, but in a few cases the puberty is retarded much beyond the usual time, the individual remaining apparently in perfect health. These two classes of cases are widely different, and their discrimination, which is of great importance, has been

already pointed out. Amenorrhœa from non-secretion of the menstrual fluid in women who have arrived at puberty, and in whom the sexual organs present no remarkable deviation from the normal state, is a symptom of very great interest, the cases included under this head being very numerous. It is very frequently the case that this form of amenorrhœa is connected with a defective condition of the general health. Of the *general conditions* which may be associated with this form of amenorrhœa *Chlorosis* is perhaps the most important. The signs of what is termed the "chlorotic" condition are the following: At the period when the external signs of puberty begin to manifest themselves, the patient usually experiences, at monthly intervals, some of the "molimina menstruationis" before referred to, but, coincidently, she falls into a general state of ill health. The strength fails, there is extreme lassitude, often great drowsiness and indisposition to exertion of all kinds; there is cephalalgia, often very intense in character; the whole digestive system is deranged; inappetency, or singularly depraved states of the appetite, nausea, obstinate constipation—these are almost constant symptoms. The skin assumes a remarkable and highly characteristic appearance, being, as the name *chlorosis* denotes, of a greenish-yellow color, more or less intense in degree in different cases; a ghostly kind of pallidity is often seen. The lower extremities may become œdematous, and the disturbance of the circulating apparatus is evinced both by this and by frequent palpitations, noises in the ears, and alterations of the sounds of the heart and of the great vessels detected by auscultation. The chlorosis and the amenorrhœa are to be regarded as both due to the disordered condition of the whole nutritive functions of the body, which is the primary etiological element. Chlorosis may be observed not only in cases where there has been no menstrual discharge of any kind, but also in individuals who have formerly menstruated slightly, but in whom the menstrual phenomena have ceased.

In a certain number of cases the *tuberculous diathesis* exerts an influence in preventing the establishment of menstruation. This phthisical tendency is itself an evidence of an extremely low state of the nutritive powers.

An attack of severe illness of any kind will delay or prevent the appearance of the menses. Dr. West mentions a case in point, in which a severe attack of scarlet fever at

the age of fifteen had had the effect of preventing menstruation up to the age of twenty.* *Cretinism* has a similar effect.

Imperfect Establishment of Menstruation.—Cases of this kind are not uncommon. The period of puberty arrives, and a slight menstrual discharge appears, then ceases, and reappears again slightly at the end of two months, more or less. Or the colored discharge is replaced by a pale fluid, tolerably regular in its monthly appearance. These are cases to which the term amenorrhœa is, strictly speaking, not applicable, but they really belong to the same category as those just considered, for as a rule the deficient menstruation is due to some disorder of the general health. A circumstance sometimes observed in cases where menstruation does not take place is the occurrence of what is termed *vicarious menstruation*—a periodic sanguineous discharge from some other part of the body, one of the mucous surfaces, or the surface of an ulcer.

Suppression of Menstruation.—Menstruation may be arrested at any period of its occurrence by the operation of certain external or internal causes, the stoppage occurring abruptly, or more slowly and gradually. We have thus two distinct types of cases.

α. Sudden Form.—Here the circumstances indicate the operation of a disturbing element: the menstrual period having arrived, the discharge has continued for some hours and has then suddenly ceased, there being an apparent connection between the cessation in question and some external or internal disturbing influence known to have been in operation at that particular juncture. Thus the menstrual flow may be suddenly suppressed by the feet getting wet or by a chill received in any other way, by fright or by the reception of distressing or exciting news. Dr. Emmet quotes three cases of suppression due to mental shock (2d ed. page 175). These are the most common causes of the kind of suppression here alluded to. Sexual intercourse has been known to produce the same result. The first symptom of the presence of one of the exanthematous diseases may be the sudden stoppage of the catamenial discharge.

Another variety of this form of suppression is that in which there is no cessation of the discharge of the marked character just described; the discharge continues the regular

* "Lectures on Diseases of Women," p. 34.

number of days, but fails to recur at the expected time. This form of suppression, as also that which may be called "suspension" of the discharge, may occur from a variety of causes. The catamenial function is frequently suspended, according to Sir Ranald Martin, in ladies on the voyage from India by the Cape. Dr. Tyler Smith states that these effects of a marine atmosphere extend in some habits to a residence by the sea-side. He mentions an instance in point, in which a lady who went to reside at one of the islands on the western coast of Scotland, together with her sister and their two maids, all became amenorrhœal.* Change of elevation from the Thames Valley to 500 feet above that level I have observed to occasion amenorrhœa in three separate individuals. Montgomery notices the effect of mental depression in producing this suspension in the case of young girls confined in prison. I have had occasion more than once to observe that women are liable to have the menstrual discharge suspended for one or two periods after first going to reside in a house the staircases of which are of stone and uncarpeted, their previous residence having had a wooden staircase only.

β. Gradual Suppression.—Under this head may be considered those cases in which the discharge having diminished in amount for two, three, or more periods, or the interval having become longer and longer, it has finally ceased.

The causes of gradual suppression of the menses may be conveniently classed under three heads—constitutional, organic, and physiological.

Constitutional.—Any circumstance, or chain of circumstances, calculated to interfere with the nutrition of the body generally and the due performance of the various functions which constitute life, may give rise to suppression of the menstrual secretion. It frequently happens that, at the time when the vital processes are in a state of great activity—when the girl is changing into the woman, and it is more than ever necessary that the body should be duly exercised, well nourished, exposed to the fresh air, and recruited by sufficient rest—these conditions, so necessary to due development and healthy growth, are wanting. Young women belonging to the lower and middle classes of society, and who are engaged for many hours daily in sedentary oc-

* "On Leucorrhœa," p. 182.

cupations of various kinds, needlewomen especially, often suffer in this way. The health gradually fails, and after a time menstruation ceases. Then, and not till then, in the majority of cases, advice is sought. Suppression not seldom takes place in a more acute manner in young women so engaged; a slight cause, and one which in a robust individual would be inadequate, being now sufficient to determine it.

When this gradual suppression is observed it behoves us carefully to scrutinize the bodily condition of the patient generally. The suppression is an important symptom, not in itself, but as indicative of some, perhaps deeply seated, morbid change, the early detection of which may be of the greatest service to the patient, if a right use be made of the knowledge thus acquired. The more common of the general constitutional conditions leading to the suppression now under consideration are—*long-continued anxiety of mind, plethora, chlorosis, anæmia, severe hæmorrhages, or long-continued discharges from the various mucous surfaces, deposition of tubercle in the lungs or other organs.*

Premature termination of the catamenia, which may be considered as a form of amenorrhœa, may be caused by chronic uterine disease, by severe and repeated hæmorrhages, etc., or it may occur without any assignable reason. In the case of a woman more than thirty years of age, the amenorrhœa may turn out to be permanent, although of course this could not be known at first.

Of the *local causes* of gradual suppression, the following are the chief: *Flexions of the uterus* frequently completely arrest menstruation, the discharge, less and less each year, finally ceases long before the proper time; and although in the majority of cases flexions tend rather to produce menorrhagia than amenorrhœa, cases of amenorrhœa are sufficiently common in connection with them. The discharge becomes scanty, and may finally cease altogether. Anteflexions, as well as retroflexions, may produce the result in question. *Disease of the ovaries* is often attended from the first with amenorrhœa, but not always. When one ovary alone is affected, the menstrual functions may go on apparently as usual. *Chronic peritonitis*, resulting in the formation of constricting bands over the ovaries—a condition to the frequent occurrence of which Dr. Tilt has, in this country particularly, called attention—may give rise to amenorrhœa of this kind. *Chronic hypertrophy* of the

uterus is sometimes associated with amenorrhœa. *Fibrous tumor* of this organ also now and then produces amennorhœa. Absence of menstrual discharge is sometimes noticed previous to the occurrence of *peri-uterine hæmatocele*. *Stricture of the cervical canal of the uterus* occurring after pregnancy, or produced by the repeated application of caustics to the os uteri, is occasionally met with as the cause of this form of amenorrhœa.

TREATMENT OF AMENORRHŒA ARISING FROM DELAY OF PUBERTY OR IMPERFECT DEVELOPMENT OF THE GENERATIVE ORGANS.

In cases where the arrival of puberty is simply delayed, if the patient be apparently strong and healthy, and if there be no appearance of menstrual molimina, no interference is necessary, at first at all events; and under these circumstances the result is usually satisfactory. The bodily rather than the mental faculties should be called into exercise, and every means taken to nourish and invigorate the system.

Absence of menstruation, together with absence of menstrual molimina, is hardly ever noticed after the age of nineteen or twenty, unless dependent on defective development of some part of the generative apparatus. In the chapter on Uterine Malformations, etc., will be found cases illustrative of this condition. In cases of defective development of the uterus or other of the generative organs, the patient may be otherwise in perfect health. Those cases are the least encouraging in which the menstrual molimina are entirely absent. Where the absence of menstruation is connected with the presence of an undersized uterus—the "infantile" uterus—Sir J. Y. Simpson recommended the continued wearing of a series of small galvanic pessaries of greater and greater length and thickness, a practice which has been since adopted with occasional success.

It need hardly be stated that cases requiring this method of treatment are very exceptional indeed. The circumstances which might justify or necessitate its adoption would be those in which general invigorating measures have been fruitlessly tried for a considerable period (which period would vary according to the age of the patient), a very complete diagnosis made as to the state of the uterus,

and the condition of the health of the individual being such as conclusively to show that the absence of menstruation is not dependent on any defect therein. The employment of Faradization promises good results under such circumstances. In a well-marked instance of infantile uterus in a girl æt. 20 who had never menstruated, this agent was used under my direction in University College Hospital for some weeks. The action of the current had the effect latterly of inducing a copious leucorrhœal discharge. The patient became vastly improved by the treatment adopted, and left the hospital for benefit of change of air; but of the final issue of the case I have no information.

The prospect of a good result from such internal treatment of the uterus is infinitely small, unless the uterus be of a tolerable size. For instance, if the uterus be half an inch too short, and the patient has arrived at the age of twenty, little benefit of any kind could be expected. The double examination described at p. 60 should be always instituted in such cases: care is required to distinguish between a flexed uterus and one which is too short. Further, it must be recollected that the imperfectly developed uterus has naturally a greater degree of anteflexion than in the normal state.

In some cases, where the general health appears to be good but no menstruation occurs, marriage is efficacious in inducing the appearance of the menstrual flow. Marriage should not, however, be recommended with the view of curing amenorrhœa, unless means have been taken to ascertain that the vagina and uterus are well, or reasonably well, developed.

TREATMENT OF AMENORRHŒA ASSOCIATED WITH DISORDER OF THE GENERAL HEALTH.

A large number of such cases come before us: the discharge has appeared once or twice, slight in quantity, and has then ceased; the subjects of these symptoms being usually young women between the ages of twelve and eighteen, suffering from general indisposition of some sort, with which the amenorrhœa is associated. In a smaller number of instances there has been no attempt at menstruation, the patients having fallen into a state of ill health before arriving at the menstrual age.

The relation, as cause and effect, subsisting between the

disorder of the general health and the absence of menstruation, it is exceedingly important to recognize from a therapeutical point of view. "The function of menstruation," says Sir Charles M. Clarke, "like the other functions of the body, is best performed when the system is in health. Now, health is not constituted by excess of fulness, or by the performance of violent actions, any more than by debility or enfeebled action; consequently the exhibition of stimulants will not influence this secretion, unless attention be given to the restoration of the general health of the patient even in cases of debility. Still less will such a mode of treatment be applicable to cases of interrupted menstruation occurring in plethoric habits, where the plethora itself is the cause of the interruption of the due performance of the natural secretions. Instead, then, of resorting to such measures—let the morbid peculiarities of the constitution and the habits of life of the patient be taken into consideration; let the first be counteracted, the second be improved; let the sanguine have her excess of fulness diminished, let the debilitated have her powers augmented; in short, let the general health be amended, and the functions of health will be restored." * This is sound doctrine. The fruitlessness and absurdity of attempting, by so-called emmenagogues alone to cure amenorrhœa coexisting with impaired health, are obvious. It must be held to be decidedly improper, by local stimulation of the uterus, to attempt to produce a menstrual flow in a phthisical patient, for instance—certainly, to give a prominent place to such treatment. It is the experience of all observant practitioners that those remedies act most efficiently as emmenagogues which produce a most decidedly beneficial effect on the defective condition of the general health. In treating such cases successfully, the production or the re-establishment of the menstrual secretion is the *final* result to be attained. Improvement in other respects must be effected first; the rest will follow as a matter of course, in the vast majority of cases.

The treatment, then, must be general—to find out what is the weak point, and to attack this. Either the patient has been living badly, taking too little food, or food not sufficiently nutritious—suffering, in fact, from a form of chronic starvation; or she has been leading a life too seden-

* "Diseases of Females," part ii., p. 38.

tary or too artificial, deprived of pure air—in short, subjecting the body, at a very critical period, to many influences known to be incompatible with sound health. A very important element in the treatment of amenorrhœa in many cases is the employment of *rest*, especially at the time when the menstrual period might be expected to occur. More particularly is this necessary in cases where the amenorrhœa has been brought on by over-exertion and under-feeding. Thus, I may cite the case of a young lady who had not menstruated for over a year, and had plainly taken too much exercise and too little food. She was directed to maintain the recumbent posture for some weeks, but she had only carried out these directions for a fortnight when the menstruation returned, and was afterward regular in its appearance. In cases where we may not think it necessary to prescribe exertion, the horizontal position should be frequently adopted instead of the sitting one. We thus relieve the heart of a part of the work it has to do, and at the same time relieve the uterus from undue pressure.

In the industrial classes of the community, neglect of hygienic laws is still productive of an immense amount of mischief in this respect. In the higher classes of society it is too frequently the case that the solicitude of parents as to the mental culture of their children interferes materially with maintenance of physical health; and in schools there has been too little time devoted to exercise, and too much to sedentary intellectual work. The fault which is frequently committed in the management of young women and girls at school is the want of adjustment of the amount of exercise to the particular case. Some girls are strong and well nourished, and such may be benefitted by a good long walk, always provided that they are *trained* to such exercise. On the other hand, girls who have not been well fed, whose tissues are weak and relaxed, succumb frequently, or lay the foundation of serious disease after a course of long walks for which they are not fitted in any sense of the word. What that serious disease may be has been described in the chapter on the Etiology of Flexions (see p. 179). From the facts there cited it is sufficiently evident that, unless carefully regulated, severe exercise is dangerous in the case of young women not strong and not well fed. It has been the practice to recommend horse exercise, long walks, etc., in cases of amenorrhœa. I have seen several cases where this

advice has been productive of great injury. It is needless to add, that the observance of early hours, administration of good and nourishing food, thorough ventilation, warm clothing, are all essentially necessary for the preservation of health during the two or three years preceding and following the date of commencement of menstruation. Observance of these rules—necessary to maintain individuals of good constitution in a state of health—is doubly necessary when there is a tendency to "weakness," or when disorder of any kind is actually present. On the important question of the *dietary*, and the effects of insufficient food (qualitative as well as quantitative), see a former chapter, p. 132.

We generally find, as an effect of the bad state of health of the patient, partly also as a cause of the same, that there is great sluggishness and inactivity of the digestive organs, evinced by want of appetite and constipation; and hence, before it is possible to administer the amount of nutritious food the patient requires, it is frequently necessary to effect an improvement in the condition of the digestive organs. Five or ten grains of the compound rhubarb pill, followed by a small dose of an aperient saline such as Friedrichshall water or Hunyadi Janos the next morning, may be given once or twice a week at first. Stronger medicines are rarely necessary. Hygienic measures, exercise in the open air, sponging with cold water, friction of the skin night and morning with a rough towel, these are valuable accessory measures, the importance of which must be thoroughly explained to the patient, or they will not be regularly and efficiently carried out. The patient should be well clothed, and great care taken to keep the surface and extremities warm. "It is," says Sir James Clark, "of the greatest consequence to invalids to maintain an active state of the circulation in the surface and extremities, which cannot be done in this country without the assistance of warm clothing." These remarks apply with great force to the particular cases now under consideration. After a few days, tonics, as iron and quinine, may be given twice or thrice daily, the condition of the bowels being regulated according to circumstances. One teaspoonful of castor-oil given every morning is a very efficient remedy, when the patient is not strong enough to take much exercise, and when straining at stool must be avoided.

The efficacy of iron in cases of amenorrhœa is very great.

It is best given as one of the components of a natural mineral water. As a medicine, it may be given in almost any form. The syrup of the phosphate is a good preparation. The citrate of iron and quinine is a good combination of the two remedies.

The dyspepsia often present in such cases is a most troublesome complication, and is best treated by administering *frequently and in very small quantities*, for some days together, food of the simplest character; avoiding all solid matters, and giving the patient only such food as it may be found by experiment she is able to digest freely and easily. Milk and water, weak beef-tea, yolk of egg beaten up uncooked with milk, soups, Valentine's meat juice, are some of the most nutritious and easily digested foods. In some cases the use of artificially pre-digested food is a most valuable resource.

Wine is useful in many cases, particularly where the patient has been in a state of chronic starvation (and such a state of things is not confined to the lower classes of society) for some months or possibly years past. The wine assists the patient to take food, and certainly materially supports the strength. To the administration of meat food I attach much importance. It should be given two or even three times a day or oftener, but in small quantities at a time (see pp. 133, *et seq.*).

Every means that can be devised to put the body in a sound state of health will be beneficial as regards the end in view—the induction of menstruation. This point must ever be kept in view: amenorrhœa is only a symptom, not a disease.

After suitable means have been well tried, and the condition of the health improved, it is occasionally advisable to send the patient to the sea-side for a short time, or at all events to order a change of air. In some cases, when medicines of a ferruginous nature are not borne well, it is found advantageous to send the patient to live in the neighborhood of a chalybeate spring. The small quantity of iron which the water contains enables it to be taken, besides which, the change of air, scene, and occupation has a most beneficial effect in improving the condition of the health. The waters of Schwalbach, Spa, Pyrmont, Driburg, Kissingen, are some of those most to be recommended for internal administration. The ferruginous waters are not, however, to be exclusively recommended in obstinate cases of ill

health associated with amenorrhœa, for in some cases the continual use of hot baths, such as those of Vichy, Ems, Carlsbad, Wiesbaden, or Baden Baden, do great good by increasing the action of the skin and of the secreting apparatus generally. Above all, patience is necessary in the treatment; we must not expect the discharge to appear at once, and, in point of fact, the patient usually improves in all other respects before this evidence of the cure being completed is obtained.

Are emmenagogues, then, never to be given with the view of producing in a more direct and immediate manner the catamenial flow? But rarely. They are more especially applicable in the cases to be presently considered, where there is suppression. The actual and immediate production of the menstrual flow in the class of cases now concerned is, however, advantageous in one way, that it sets at rest any doubt we may have as to the possibility of menstruation. And the more direct action may be sought to be induced in cases where general measures have been fairly tried and found unavailing; also in cases where, the general health being good, and no attempt at menstruation observed, it is thought expedient to try this method of treatment as a kind of *dernier ressort*. The best method to follow in endeavoring to induce directly this action of the uterus will be considered presently.

Chlorosis and Amenorrhœa.—What has been said respecting the management of cases of amenorrhœa, with disorder of health of whatever kind, is here applicable. These cases are now and then obstinate, and in a chronic case time and patience are requisite. The bowels are generally very costive. Daily, a laxative draught should be given, the medicine selected being that which acts most easily—rhubarb, Rochelle salt with manna, castor-oil; these are some of the simplest we can select, and by no means the worst; and once a week or so a stronger draught containing decoction of aloes with some aperient salt may be required. Ferruginous preparations are essential; small doses are generally the best; and they are most efficacious when given as constituents of mineral waters. It is often a matter of experiment as to which form of iron suits the best. The subjects of chlorosis are often so debilitated that great care is at first necessary, and they are unable to take much food or to bear much active exercise. Hence a vigorous treatment is not at first advisable. We must adapt the food and the

regimen to the strength of the patient. Wine and good food are most essential in the management of these cases.

Amenorrhœa with Vicarious Menstruation.—The object of the treatment in these cases is first to improve the state of the health, which is generally bad, by tonics, etc., and secondly, to endeavor to induce congestion of the uterus and pelvic viscera at the menstrual periods. The patient should be treated, in fact, as if she were the subject of menstrual suppression. Lastly, it will be necessary to alleviate any discomfort, pain, or inconvenience which may be consequent on the unusual discharge.

TREATMENT OF SUPPRESSION OF MENSTRUATION.

In a case of *acute* suppression of the menses, if seen in time, the proper treatment would be to place the patient immediately in a warm hip-bath, and to administer a stimulant, such as hot gin and water, and, especially if a sudden chill be the cause, to endeavor to excite the action of the skin by placing the patient in bed, and giving a dose (ten to fifteen grains) of Dover's powder. A sinapism should be applied to the hypogastric region; hot-water bottles or bags to the lumbar region. In strong or plethoric habits, cupping to the loins, or venesection, would be proper; leeches to the upper and inner part of the thigh might be used in most cases. It is probable that the most powerful means of inducing the return of the discharge under such circumstances would be either the application of electro-galvanism, or the administration of an enema containing aloes by the rectum. It generally happens, however, that when the patient comes under observation the period for such treatment is gone by. We must in such cases wait until a day or two before the next period, and then apply suitable remedies. The remedies consist in keeping the patient quiet, maintaining a comfortable temperature of the body generally, placing her in a hip-bath, with mustard, night and morning, for three or four times if necessary, administering two or three times a day a warm stimulating draught, and if the case be obstinate, and other circumstances do not forbid, in using galvanism, or some one of the emmenagogues to be presently spoken of. Opium is a most valuable remedy in cases where mental emotions have had to do with the suppression. We now and then meet with cases of sudden suppression in young women of

weakly habit, who have been subjected to disturbing emotional influences at the menstrual period. In these cases, opium, and a supply of good nourishment, should be both freely given, and rest and quietude enjoined.

Many different medicines or remedial measures are set down as efficacious in inducing the flow of the menses; but they are exceedingly uncertain in their effects and action in different individuals, and very frequently have no effect whatever. Most of the so-called emmenagogues act, it must be concluded, by producing congestion and fulness of the vessels of the uterus and surrounding parts. The following are some most recommended: aloes in form of enema, dissolved in soap and water (Aran); the old pill of aloes and myrrh of the Pharmacopœia, which should be given in doses of five grains or upward, every night and morning, for a few days prior to the expected period; liquor ammoniæ, dissolved in milk (a teaspoonful of the ammonia in a pint of milk injected into the vagina); savin, the oil of which may be given dissolved in mucilage in doses of three or four drops (Sir Charles Clarke, Dr. Tilt, and others); iodine (Dr. Rigby, who preferred it in the form of iodide of iron); Sir Charles Locock found a combination of myrrh, aloes, sulphate of iron, and the essential oil of savin, frequently of great utility. Ergot of rye, in doses of ten grains three times a day, is also highly spoken of by the same authority.

Mustard has been said (Ashwell, Rigby) to have an emmenagogue effect, given in doses of ten or twelve grains. The syrup of the iodide of iron is the remedy I have most frequently employed, and I think highly of it for long-standing amenorrhœa originally arising from suppression.

Sir J. Y. Simpson employed as a means of cure the application of direct stimulants to the interior of the uterus —nitrate of silver, cantharides, or iodine—by means of a *porte caustique*, the application to be made at the time when menstruation should occur, and repeated at monthly intervals; he also recommended a kind of dry cupping of the interior of the uterus, and the employment of galvanic intra-uterine pessaries of peculiar construction, in the form of amenorrhœa now under consideration. Dr. Althaus states that he has in many cases found great benefit from Faradization assiduously and properly applied. Pulvermacher's apparatus is also a most simple and ingenious method of continuously applying this therapeutic agent,

and is peculiarly suited for chronic cases of amenorrhœa after the general health has been re-established by suitable means.

Cases of *chronic suppression* require to be treated on the foregoing principle—first, to correct the ill health generally present, then to encourage month by month, by gentle measures, the return of menstruation.

TREATMENT OF CASES OF MENSTRUAL RETENTION.

The various physical conditions giving rise to menstrual retention require each a suitable method of treatment.

1. *Absence of Vagina and Menstrual Retention.*—Here menstruation is not possible, there being no communication between the vulva and the uterus. Absence of such a communication is sometimes associated with defective development of the uterus; and in such cases, even if a communication existed, menstruation would not for that reason occur; but in other instances, although the vagina is wanting, the uterus is well developed, and menstrual blood is poured into its cavity at each menstrual period. The distension of the uterus may be very considerable, the sufferings of the patient gradually increasing in intensity, chlorosis and other signs of grave constitutional disorders being present. The only treatment capable of affording relief is surgical. The difficulties encountered in affording such relief vary in different cases, but are always very much greater than in the case of imperforate hymen with retention. And not only are the difficulties greater, but the danger from an operation is more considerable.

The case operated on by Amussat * will probably always be quoted at once to illustrate the difficulties of an attempt to make a vaginal canal, and to point out how these difficulties may best be overcome. The case was that of a girl aged 15½ years, in whom the vagina was absent, and who had suffered from symptoms of menstrual retention since the age of 13. There was a tumor above the pelvis the size of the uterus at six months' gestation. The tumor was felt from the rectum; the urethra was the only opening at the vulva, and a sound passed into it could be felt from the rectum through a very thin partition ("à travers des parties très minces"). The diagnosis was evident. Thereupon

* "Gaz. Médicale," 1835, pp. 785 and 817.

Amussat, after stretching the vulva, pushed the handle of a sound upward beneath the urethra, and then, using the little finger in a similar manner, sought to make a passage toward the fluctuating pelvic tumor, in the direction of the vagina. By drawing the perineum downward and at the same time pushing the finger inward, a sort of separation was effected. Sponge was now inserted to maintain the dilatation, and three days later this combined tearing and dilatation process was resorted to anew. After two further attempts, on the two following days respectively, the tumor was finally reached. The dilatation was kept up by means of sponge. On the tenth day after the first operative procedure the tumor was punctured, first by a trochar, and next by a bistoury, and the menstrual fluid, so long retained in the uterus, allowed to escape. The tumor was, at the time of the operation, two inches from the vulva. The opening into the uterus was enlarged, and a canula inserted. Inflammation of the left Fallopian tube resulted, clots were expelled from the rectum. Four times after this the patient suffered from menstrual retention, but a cure was finally obtained, and she was restored to such perfect health that two years later the question of the propriety of marriage was seriously discussed.

Amussat rejected the use of the knife from the obvious difficulty of avoiding the bladder on one side, and the rectum on the other. The chief difficulty of following Amussat's plan is the tediousness of the procedure, and the objection on the part of the patient to its continuance. In a case related by Bernutz * the operative procedure was interrupted for this reason, when, as it appeared from what took place subsequently, tumor of the uterus was on the point of being reached. In a case very much resembling that of Amussat's, Dr. Braxton Hicks was prevented completing what promised to be a very successful operation for the formation of a vagina, in a similar way.†

Another method of treatment which has been adopted in cases of this kind is to puncture the uterus from the rectum. It is obvious that this procedure is open to the serious objection that the passage made for the escape of the menstrual blood is not in the natural position, while the evacuation of the fluid is also less under the operator's control. It appears that in some cases, however, the septum between

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* *Loc. cit.*, p. 307.

† "Obst. Trans.," vol. iv., p. 232.

the urethra and rectum is so thin as not to admit of the attempt to form a passage to the retained fluid in that position.

If formation of a vagina be really impossible, this tapping of the uterus from the rectum is the only alternative. For the performance of the operation a curved trochar is necessary, and great care must be exercised so as to avoid injuring the bladder. The observations as to the manner in which the fluid should be allowed to escape from the uterus, which will be presently made in relation to imperforate hymen, here apply with still greater force. The evacuation of the fluid must be made very slowly, the recumbent posture must be maintained, and opiates will be probably required.

An interesting case was related to the Obstetrical Society by Mr. Baker Brown, in which there was vaginal atresia with menstrual retention of two years' duration, the uterus as large as at four months of gestation. The uterus was tapped as above, the trochar left in for a fortnight. A month later the patient menstruated per rectum. In two cases, very similar to the one related by Mr. Brown, Dr. Braxton Hicks performed the same operation, and evacuated the contents of the uterus successfully. Dr. Hicks considers that the canula should not be left in the opening thus made for longer than ten or twelve hours; to avoid the introduction of air he recommends the canula to be plugged just before the complete evacuation of the uterine contents.

Dr. Emmet has operated very successfully in some cases of the same kind. He procures a passage by a combined process of cutting and tearing, using a trochar finally to draw off the retained menses, and washing out the uterus at the end of the process and inserting a glass dilator. Dr. Galabin* records two cases where a somewhat similar operation was performed; but his experience was unfavorable to the use of an injection into the uterus as a part of the operation, for one of the two patients died. Dr. Galabin considers the congenital cases more unfavorable for use of injections. He also cites four cases of operation in which the occlusion was the result of cicatricial contracture following labor or operative procedures, in which he allowed the fluid to drain off after puncture, not using uterine in-

* *Obst. Journ.*, 1878, p. 360.

jections until twelve hours after; all the four cases doing well.

As regards the general question of the success attending operations of the above character, it appears that so far as the relief of the retention is concerned they are tolerably successful; and there is no great difficulty in maintaining an outlet sufficient for escape of menstrual products. But as regards the maintenance of a vaginal canal sufficient for marital purposes, experience shows that this is frequently a matter of great difficulty, and that repeated operations with much and persevering use of dilators are required, in most instances, to preserve a sufficiently large vaginal canal.

2. *Imperforate Hymen with Menstrual Retention.*—The operation required in these cases is perforation of the hymen. In a certain number of cases death has taken place after perforation of the membrane, for the relief of menstrual retention, and blood has been found effused into the peritoneal cavity, thus giving rise to peri-uterine hæmatocele. In other cases death has occurred, without effusion of blood in this manner, from peritonitis and pyæmia.

[The operation for the evacuation of retained menstrual fluid has been often attended with fatal results.

It was formerly the custom to make a small valvular opening in the obstructing membrane, whether it be at the hymen, the os tincæ, or at some intermediate point in the course of the vagina between these two. This allows the fluid to escape slowly. Death occurring from this simple operation has been the result of air passing into the cavity, decomposing a part of the fluid and thereby causing blood poisoning. But we now no longer look upon this operation with the dread that we formerly did, for Dr. Emmet has taught us that the safest method of operating is to evacuate the retained fluid at once, if possible, and then immediately wash out the cavity with warm water, antisepticized, and repeat this as often as necessary to keep the uterine cavity clear of septic material..

Dr. Emmet reports twenty-two cases of retention of the menstrual fluid: four due to imperforate hymen, seven to congenital absence of the vagina, nine to congenital atresia of the cervix, two to traumatic atresia, making twenty-two; and all recovered without a single death. Thus we think that his experience establishes a rule of practice which we may always follow safely.]

In these cases of menstrual retention, the uterus, the

Fallopian tubes, and the vagina, are distended with blood, the uterus attaining sometimes a very great size, and reaching as high or higher than the umbilicus in extreme cases; this state of things having persisted for several months, in some instances even for years, before the nature of the case has been recognized, or, at all events, before effectual relief has been attempted. The cavities containing the blood have their walls greatly thinned and otherwise altered.

Bernutz * thought the unfortunate result, when associated with intra-peritoneal hæmorrhage, due to the contraction of the uterus, set up by the evacuation of the fluid, continuing and forcing the blood contained in the Fallopian tubes into the peritoneal cavity. This explanation probably holds good in most cases of this kind. The fatal result, in some instances, may be due to a combination of one or more circumstances. The sudden withdrawal of the distending force in cases where the walls of the Fallopian tubes have been thinned and enlarged, must itself have an injurious effect on the vitality of the tissues of the part in question. A certain number of deaths are to be attributed to purulent absorption, the admission of air producing decomposition of the blood and pyæmia. It is evident that the circumstance pointed out by Bernutz is exceedingly important in reference to the plan of treatment to be adopted in these cases.

A careful survey of the facts on record would seem to lead to the conclusion that a fatal result is much more likely to occur when the retention has lasted a long time; and the prognosis would consequently be more favorable for an operation performed two months, than in the case of an operation performed six months after the first attempt at menstruation. And this would clearly indicate the great importance of an early and complete diagnosis of the case. With respect to treatment, it is evident that in a case of retention due to imperforate hymen our only resource is surgical. A way must be prepared for the evacuation of the fluid. The mode of performing the operation which I consider preferable is as follows: In the first place, it is desirable that the evacuation of the fluid be spread over as long a period as possible in order to prevent undue and irregular action of the uterine fibres, and to allow time for the parts to return in the most gradual manner to their proper

* "Clin. Méd. sur les Maladies des Femmes," tom. i., p. 68.

size. In the second place, it is absolutely necessary to avoid all possibility of passage of air into the vagina and uterus during or after the operation. The plan formerly adopted was, by means of a lancet, or bistoury, or trochar, to make an opening in the hymen sufficient to allow of the escape of the chief part of the retained blood at once. I believe it better to make an opening at first just large enough to allow of the escape of a very minute quantity of fluid, and that this opening be made obliquely in the obstructing membrane, giving it a valvular character. The fluid should be evacuated *guttatim*. If the opening become closed, a second and similar opening to be made the following day, or two or three days later, and a firm but gentle support given to the abdomen by the aid of a bandage and carefully adjusted pad of cotton-wool during the whole period of evacuation of the fluid. The patient to be kept in a state of absolute rest. The aperture in the hymen should not be increased in size until the uterus has returned to its proper dimensions, the object being, at first, simply to allow the fluid to escape in the most gradual manner possible. If, by any chance, air enter, and the fluid become decomposed, it would be safer at once to make a free opening and freely employ antiseptic injections. It is satisfactory to find that this method, suggested in a former edition of this work, has been adopted by others, and found to answer well. I have found it satisfactory and reliable in the cases which have come under my own notice. It is questionable whether the practice of injecting water into the uterus as a *primary* procedure after an operation of this kind be safe. Bernutz recommends that in evacuating the fluid a period be chosen for the operation eight or ten days after a menstrual period, and that a small trochar be used. He considers pressure over the abdomen objectionable. In the latter particular the method recommended by myself differs from that of Bernutz, for I consider, and my plan has been tested in practice, the pad and bandage indispensable. In other respects the principle of the two methods is identical, in both the necessity for slow evacuation of the fluid being recognized.

3. *Retention from Imperforate Os Uteri.*—Cases of *complete* retention due to this cause are rare. The more ordinary cases of *incomplete* retention—in other words, dysmenorrhœa—will be dealt with in the chapter on "Dysmenorrhœa."

CHAPTER XXXIII.

MENORRHAGIA.

DEFINITION.—Various Forms of Menorrhagia.
PATHOLOGY AND ETIOLOGY.—Relation of Pregnancy and Abortions to Menorrhagia and Metrorrhagia—General or Constitutional Causes—Locality—Lead Poisoning—Sexual Excesses—Pyrexial Disorders—Cancer of the Uterus and allied Affections—Polypi and Fibroid Tumors—Peri-uterine Hæmatocele—Chronic Inversion of the Uterus—Climacteric Hæmorrhages—Flexions of the Uterus—Chronic Congestion of Uterus and Hypertrophy of its Mucous Lining (so-called Fungosities)—Relation of latter Conditions to Flexion—Defective Involution—Abnormal Conditions of Os Uteri—Laceration—Eversion—Hypertrophy—Small Mucous Polypi.
DIAGNOSIS.—Examination of Uterus—Examination of various Substances expelled.
GENERAL TREATMENT.—Tonics, Baths, Medicines and other Measures.
LOCAL TREATMENT.—Intra-uterine Cauterization, and Removal of Mucous Membrane by scraping.

The term "menorrhagia" implies an excessive menstrual discharge. The term "metrorrhagia" indicates hæmorrhage from the uterus not menstrual in origin. At least this is the ordinary distinction drawn between them.

When a discharge of blood occurs from the female generative passages, it may proceed from the uterus, as is generally the case, or it may prove to be a hæmorrhage from the vaginal wall, from the vaginal outlet, from the bursting of a varicose pudendal vein, or from the urethra. Hence cases of bleeding from the generative passages are not necessarily cases either of menorrhagia or metrorrhagia.

The catamenial secretion appears to be naturally more profuse in some individuals than in others, the quantity of the secretion being great, or the period during which it is observed being extended, from the presence of what may be characterized as idiosyncrasy, from the influence of climate, age, and the like. All these circumstances must be taken into account in giving an answer to the question, "Is the catamenial secretion excessive?"

The forms under which menorrhagia and metrorrhagia present themselves are numerous. The following are some of the more common forms in which these unusual losses of blood from the generative organs exhibit themselves:

1. The menstrual discharge becomes gradually from month to month increased in quantity, until in the aggregate the quantity lost is really considerable.

2. The loss at the monthly periods is great, and accompanied by passage of clots, pain, etc.

3. The patient loses an excessive quantity of blood at the periods, and occasionally also in the intervals a copious discharge of blood suddenly occurs.

4. There is an almost continuous discharge of blood from the generative organs, sometimes with clots, alternating with leucorrhœa.

5. The loss of blood occurs suddenly, and not at the menstrual period, and is accompanied by pains in the back or region of the uterus.

This list might be indefinitely increased. The variations in regard to the attendant phenomena, pain, intermittent leucorrhœa, offensive character of the discharge, and prostrating effects on the system, are also numerous.

In seriousness of character, also, we have many varieties. In many instances the loss of blood is simply an inconvenience; in others the patient's life is in peril from the quantity lost. In other cases, again, the prognosis is unfavorable because the disease occasioning the loss is a serious one.

PATHOLOGY AND ETIOLOGY.

Undue bleeding from the uterus may be produced by a great variety of causes, and the difficulty of differentiating these various causes is increased by the circumstance that the uterus being the source of a periodical natural bleeding, there is a predisposition to hæmorrhage from this organ which does not exist in the case of other organs of the body.

Relation of Pregnancy and Abortions to Menorrhagia and Metrorrhagia.—Here it may be desirable, in connection with the subject of menorrhagia, to allude to that important class of cases in which the loss of blood is due to pregnancy.

A discharge of blood from the generative organs in a case where menstruation has been previously absent for a month, or for a period of two or three months, and in a woman whose age does not forbid the idea of pregnancy, should *always*, whatever be the condition and circumstances of the patient, suggest the possibility of abortion.

In cases of abortion, the menses are found to have been

absent for from two to four or five or six months; the hæmorrhage which occurs begins slowly, preceded sometimes by shivering, nausea, pains in the back and thighs, etc.; and is accompanied by pains at the lower part of the abdomen, resembling, and in fact identical with, those of labor. The hæmorrhage is not continuous, but pauses, and recurs again after ceasing a few minutes or more. There is generally, too, a periodicity in the recurring attacks of pain and hæmorrhage. At the end of a few hours, or, in some cases, a shorter interval, the ovum, or portions thereof, are expelled, together with clots; and if the expulsion have been complete, the hæmorrhage ceases, unless perchance there be a second ovum still in the uterus, as in case of twins. The expulsion may be delayed for a much longer time, or the embryo may be expelled, leaving the membranes behind, and in such cases the hæmorrhage continues, becoming at times very profuse. Hæmorrhage from the uterus, more frequently than is usually supposed, occurs from abortion at about the second month in married women; the real cause being often overlooked, and the case supposed to be one of simple menstrual irregularity. I have known cases of abortion which have nearly proved fatal owing to their being mistaken for simple menorrhagia. The diagnosis of early abortion from excessive menstruation is indeed often far from easy. If the abortion take place at an early period, examination of the uterus from the vagina gives no positive data for determining the point. The only reliable evidence obtainable at this period is that afforded by a very careful examination of the clots or matters expelled from the uterus. (See Substances expelled from the Generative Passages.) At a later period, the evidence from the physical condition of the uterus is more decided.

If an abortion have occurred recently, and hæmorrhage take place a few days after, recurring possibly on successive occasions, it may turn out, on inquiry or on examination, that the embryo has been expelled, but the placenta, or some portion of the membranes, retained. Such retention is often a cause of most severe and dangerous hæmorrhage. The placenta is small in the case of an ovum at three to four months; but yet, when retained in the manner stated, it may be the cause of severe and extensive hæmorrhage. When the embryo is expelled earlier than this, the part left behind is constituted chiefly by the decidua; and

this substance may become thickened and hypertrophied to a very remarkable extent. A vaginal examination is always necessary in a case of suspected abortion. We must not rely too much on the assertions of patients. Sometimes clots only have come away when it is stated that the abortion has occurred.

During the last three months of pregnancy, hæmorrhage now and then occurs from the placenta being attached partially or entirely over the mouth of the uterus—*placenta prævia.* We draw the inference that when, in the latter part of pregnancy, hæmorrhage suddenly occurs, the presence of placenta prævia is to be suspected. Between hæmorrhage the result of an abortion, and of placenta prævia, there is this difference: in the case of abortion, the patient may or may not be aware of her pregnant condition, or, knowing her pregnant state, may have reason for wishing to mislead her attendant; in cases of placenta prævia the patient is usually known to be pregnant. Hæmorrhage may occur during pregnancy, and may be profuse, when there is nevertheless no implantation of the placenta over the os uteri; the cause being a separation to a slight extent of the placenta from the uterus. Such hæmorrhages have been called in obstetric language "accidental," as distinguished from the "unavoidable" hæmorrhages the result of placenta prævia. An "accidental" obstetric hæmorrhage may or may not be followed by expulsion of the child.

General or Constitutional Causes.—The condition of the blood itself is undoubtedly an important etiological element in many cases. The various diathetic conditions which are known to predispose to hæmorrhages generally come under this classification.

Persistent and repeated hæmorrhages of any kind, by producing a weak, watery, defibrinous condition of the general circulating fluid, may thus give rise to menorrhagia and metrorrhagia. *Purpura, or the tubercular diathesis,* may induce bleeding from the uterus much in the same way.

Bright's disease of the kidneys, indicated by an albuminous condition of the urine, generally accompanied also with œdema of the ankles, eyelids, etc., is one of the most important general causes of menorrhagia. *Excessive lactation* is another equally important cause; patients are often excessively debilitated under these circumstances: as a further consequence in these cases of excessive lactation, *mania* is

not unfrequently observed. *Long-continued mental depression* is both a cause and an effect of menorrhagia. Then we have a large number of cases due to *chronic disorder of the digestive organs*, leading to congestion of the uterus and pelvic organs generally, *chronic affections of the great viscera, the heart, lungs, and liver*, also giving rise to the congestion of the pelvic organs, and, short of actual disease, general derangement of the system produced by *luxurious living* and *sedentary or unhealthy occupations.*

Residence in damp or marshy districts, where *malarious influences* are rife, has been shown to be the cause of profuse menstruation in certain cases: here menorrhagia is not unfrequently present together with intermittent fever. *Residence in tropical climates* is, in the case of Europeans, followed, in most cases, by profuse menstruation; indeed, in most cases where women return to England from India in a broken-down state of health, menorrhagia is a prominent symptom. Troublesome flexions of the uterus are also frequently found in such patients.

Menorrhagia may be present *in cases of leaa-poisoning.* It was first pointed out by Paul * that abortions are very frequently observed in women subjected to the influence of lead, and also that in the same class of cases menorrhagia is very common. I have observed facts which are quite confirmative of Paul's statement. Mr. Benson Baker has contributed further facts confirmatory of Paul's statements.†

Sexual excesses, or circumstances calculated to excite and maintain the existence of erotic tendencies for any length of time, produce occasionally such a degree of functional activity of the ovaries as results in the production of profuse menstruation, and of hæmorrhage at non-menstrual periods. The amount and character of the menstrual discharge being thus guided and affected by the condition of the ovarian function, it is not to be wondered at that, when the *ovaries are the subject of disease*, the uterine sanguineous discharge should be also deranged. More generally the presence of ovarian disease diminishes, or at all events does not increase, the menstrual flow; but the reverse has been pretty frequently observed. Mechanically, also, and in

* "Arch. Gén. de Med.," 1860.

† "On the Influence of Lead-poisoning in producing Abortion and Menorrhagia, with Cases."—"Obst. Trans.," vol. viii., p. 41.

common with other adjacent organs, disturbances of the circulation in the ovaries may tend to hæmorrhage from the uterus. The practical deduction is that, in a given case, functional activity of the ovaries, or disease of these organs, may be the cause of uterine hæmorrhage, the uterus itself being really in a healthy state.

Pyrexial Disorders.—Perroud (*Gaz. Méd. de Lyon*, Jan., 1862) has observed that an occasional effect of the onset of the pyrexial disorders is the appearance of the menstrual flow a few days before its time. In scarlet fever, small-pox, measles, unusual profuseness of the menstrual discharge, in some cases associated with the accident known as peri-uterine hæmatocele, has been observed. Mr. Benson Baker, who has made numerous observations in reference to small-pox, states that this sudden appearance of menstruation was a frequent premonitory symptom. Profuse menstruation is also liable to occur as one of the *sequelæ to fevers.*

Mental disturbances may give rise to a flow of blood from the uterus of purely menstrual character, although not appearing at the ordinary menstrual period.

ORGANIC DISEASES OF THE UTERUS.

Cancer of the Uterus.—Of this occasionally insidious and very fatal disease, hæmorrhage to a greater or less extent is a prominent symptom, though not invariably so. The amount and periods of occurrence of the hæmorrhage vary according to the seat of the disease and the stage to which it has advanced. When a woman has entered on what may be called the "cancerous age," and begins to suffer from menorrhagia with occasional losses of blood besides, or when, having ceased to menstruate, hæmorrhages are observed, the possibility of this symptom being due to cancer must be recognized. Later—that is to say, when the disease is more advanced—hæmorrhage is rarely the only symptom present, and we have generally much pain, an offensive sanious leucorrhœa, and constitutional disturbance. One point must particularly be recollected, that, for a certain time, hæmorrhage may be the only sign observed.

Thus, in a series of cases carefully observed by Dr. West, hæmorrhage was the first symptom in 43.9 per cent of the cases. In certain cases there may be an entire absence of the sign now under consideration, there being only profuse

menstruation. Another circumstance, also rare, but which may be subject of observation, is that the hæmorrhage is unattended with pain. In an instance noted by myself the first occurrence of hæmorrhage was produced by sexual intercourse, the patient, aged 48, being affected with undoubted cancer.

Cauliflower excrescence of the os uteri gives rise, as a rule, to hæmorrhages of an irregular character. The hæmorrhage is usually brought on by walking, by exertion of any kind, by coughing, sneezing, etc. There is usually offensive watery discharge in cases of this disease.

Sarcoma of the uterus and corroding ulcer of the os uteri are rare affections, attended with hæmorrhage, like that of ordinary cancer, of which disease they are probably only varieties.

Polypi and Fibroid Tumors.—The several kinds of *polypi* of the uterus produce hæmorrhage, often very severe, and sometimes of an ultimately fatal character. The abundance of the hæmorrhage is not by any means in direct proportion to the size of the polypus, but depends rather on the degree of vascularity present. The hæmorrhage is irregular in character, and, coinciding more or less with the menstrual discharge, as it frequently does, it may be at first overlooked; its tendency is to increase in quantity, but the march of the symptoms is slow, and if the loss be not considerable, the general health may remain little affected. A most important class of cases is that in which polypi, entirely within the uterus, occasion severe hæmorrhage, the cause of the hæmorrhage escaping recognition owing to the absence of dilatation of the os uteri. Sir J. Y. Simpson was the first to point out the necessity for exploring the interior of the uterus, by dilatation of the os uteri, in suspected cases of this kind. When the polypus becomes very large, "pressure" signs, such as difficult micturition, difficult defæcation, accompany the enlargement of the uterus. Abortions are frequently due to uterine polypi. Clots or partial moulds of the uterine cavity are found sometimes in the discharges. With reference to the kind of polypus present, the nature of the hæmorrhage gives us no precise information. Very profuse hæmorrhage sometimes results from very small tumors — "mucous" polypi, as they have been called—situated just inside the os. In cases of polypus uteri, there may be profuse leucorrhœa, and there may be much pain; but the leucorrhœa is

not, except in rare instances, offensive, as it is in cancer, and the pain is of a different character. Moreover, the patient with polypus may, comparatively speaking, remain *in statu quo* for some time—an observation which does not apply to cancer. Cases are not rare in which uterine polypi remain for years undetected, the hæmorrhage, by its long continuance, finally sapping the very foundations of life, the skin becoming blanched and withered-looking, and the patient reduced to an extreme state of feebleness.

Fibroid tumors of the uterus, which have a composition identical with that of fibrous polypi, both being growths of the uterine tissues, may or may not cause hæmorrhage, the position of the tumor very much affecting this result. Thus, if the tumor project into the cavity (sub-mucous variety), the result, as regards the hæmorrhage produced, will be pretty much the same as if a polypus were present. The further the tumor is from the mucous membrane, the less frequently, as a rule, does hæmorrhage occur. In the early stages of these growths hæmorrhage may be entirely absent. Menstruation is generally excessive, both as regards duration and quantity; sooner or later other symptoms, interperiodic hæmorrhages, abortions, etc., are observed. When these fibrous growths attain a very considerable size, they often produce pressure signs, as in the case of large polypi. The hæmorrhage produced by fibroid tumors is often accompanied by a good deal of pain, and the pain is spasmodic, somewhat resembling that due to abortion. Cases of abortion are distinguished from cases of fibrous tumor with hæmorrhage by the circumstance that the pain and the hæmorrhage cease together in the former instance, but not in the latter.

PERI-UTERINE HÆMATOCELE.

Cases in which there is an *abrupt appearance of profuse menstruation* require a special mention. A sudden attack of this kind is found, in a certain number of cases, to be associated with a most dangerous and alarming accident, the pouring out of blood in the pelvis, in the neighborhood of the uterus, either in the peritoneal cavity or into the cellular tissue beneath the peritoneum, giving rising to formation of a tumor—*peri-uterine hæmatocele*—and the production of a series of symptoms of a highly interesting and important character. The sequence and intensity of

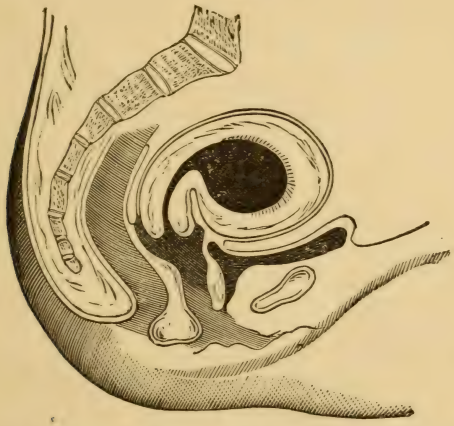
the symptoms, of course, vary in each case; they often present themselves in the following order: Previous good health, as regards menstruation, abrupt appearance of a considerable flow of blood from the uterus at a menstrual period, great pain in the abdomen, and symptoms as of perforation, a blanched condition of the skin, and all other signs of violent hæmorrhage, syncope, etc. The patient may die from the actual loss of blood effused under these circumstances into the peritoneum, or from the effects of the subsequent changes in the clot there formed. The accident termed peri-uterine hæmatocele is not always accompanied by profuse menstruation; indeed it very frequently happens that at the time of the occurrence of the internal hæmorrhage the external discharge is not observed. The most common case is perhaps that in which menstruation, having been generally and for some time rather profuse, becomes for a time either suppressed or much less than usual; the symptoms of internal hæmorrhage then suddenly appearing. The peri-uterine hæmatocele is not, it must be recollected, the *cause* of the excessive menstruation. The cause of both the excessive menstruation and the hæmatocele will be found in some predisposing general condition of the patient, or some previously existing change in the ovaries, tubes, etc., or both general and local disease combined. Irregularity of menstruation of some kind or other generally precedes the attack; and the practical fact to bear in mind is, that a suddenly occurring attack of profuse menstruation may be associated with this dangerous accident.

Chronic Inversion of the Uterus.—This is a condition capable of giving rise to severe hæmorrhage. Curiously enough, the existence of this condition is sometimes found to have escaped recognition for so long a time after the delivery that the diagnosis of the nature of the case has been rendered very doubtful.

Hence the necessity for calling attention to the fact that hæmorrhage, occurring some time after a particular labor, may be due to inversion. As a rule, where the accident has escaped recognition, it is found that there has been hæmorrhage occurring at intervals ever since the delivery; that the hæmorrhage was at first very severe; that it gradually became less; that subsequently it assumed the character of excessive menstruation, the hæmorrhages for the most part occurring coincidently with the usual catamenial

periods; that between these, however, great losses of blood had been often observed. The hæmorrhage is not profuse and sudden in character, but it is a continuous drain going on for a certain time, and then ceasing partly or entirely. In such cases there is also profuse and purulent leucorrhœa. The symptoms, of course, date from a previous pregnancy; and, in nine cases out of ten, it is found that undue force was used in the removal of the placenta after the delivery in question. Polypus of the uterus gives rise to symptoms very closely resembling those of inverted uterus.

FIG. 146.*



Climacteric Hæmorrhages.—When the menstrual flow is finally about to cease, profuse losses of blood are apt to occur, and to recur at intervals for a considerable time. Climacteric hæmorrhages are more often observed in sanguine temperaments, and in those who have been the subjects of profuse menstruation. They sometimes simulate hæmorrhages due to cancer of the uterus.

Flexions of the Uterus.—Both retroflexion and anteflexion of the uterus may occasion very severe menorrhagia. The hæmorrhage is perhaps more liable to be very severe in cases of retroflexion, but I have seen very profuse losses of

* Fig. 146 represents an enlarged expanded uterus, such as is sometimes met with in cases of menorrhagia. Cases somewhat similar, the cavity being smaller, are more numerous.

blood from anteflexion. And inasmuch as anteflexion is more common than retroflexion, menorrhagia is more frequently produced by anteflexion than retroflexion.

The excessive loss of blood which is liable to occur in cases of flexions appears to be associated with the obstruction to the circulation in the organ, and is partly due to the obstruction to the escape of the blood from the uterus. And it is further increased by the congestive hypertrophy which is liable to affect the mucous lining of the uterus in such cases. In these cases a passive congestion affects the uterus, prevents the free passage of the blood, and the sinuses and veins become loaded therewith. The uterine cavity becomes filled with blood which cannot escape readily enough. Distension of the cavity follows (as described at p. 216), and after a time the collected blood is suddenly expelled in a sort of gush, this process of alternate filling and evacuation of the uterus repeating itself at intervals. When this state of things has been going on for some years the uterus is found in a state of general hypertrophy, the patient not only suffers from profuse loss of blood at the menstrual period, but bleedings are liable to occur at other times, and in some cases the patient is hardly ever free from loss of blood.

Although not a very common occurrence at that age, I have seen some few cases of most severe menorrhagia produced by anteflexion in *quite young women* at the age of seventeen or eighteen, the hæmorrhage being almost continuous and unchecked by remedies until the real nature of the case was ascertained. And equally I have seen very severe menorrhagia in quite young women suffering from retroflexion.

More commonly the severe cases of menorrhagia due to flexions are met with in women who have had children: the uterus imperfectly contracted after labor has settled down into a wrong shape, and menorrhagia has resulted from the distortion of the uterus thereafter occurring.

Chronic Congestion of the Uterus.—In many cases of menorrhagia or metrorrhagia the uterus is intensely congested. As explained in the chapters on Congestion and Flexions, this congestion is very frequently associated with flexions. It is in the large majority of cases a mechanically produced congestion, and one of its results is hæmorrhage from the lining of the uterus. One of the effects of chronic congestion of the uterus is to produce a swelling tumefac-

tion, and undue vascularity of the mucous lining of the uterus. This can be often seen by means of the speculum, so far as it affects the lining of the cervix, at the os uteri, where a light pink is exchanged for a deeply congested, hæmorrhagic appearance. The interior of the *body of the uterus*, however, is lined by a membrane of much greater vascularity than that of the cervix uteri. When the uterus is as a whole greatly congested the lining is, or may be, equally affected. The natural oozing of blood which occurs from this mucous surface during menstruation is thus liable to be increased in amount. The thickness of the lining is increased, and as the epithelial surface is removed (as a part of the natural menstrual process), and it becomes denuded, the surface thus thickened and injected with blood is thrown into folds and projections which assume a villous or fungous-like shape. This is the probable explanation of the fact that such a condition of the uterine surface is met with in some cases of menorrhagia. The villous projections, according to this view of the matter, are merely hypertrophies associated with great vascularity and passive congestion of the lining of the body of the uterus, and the state of the uterine interior under such circumstances is not indicative of new formations, but simply of an excessively swollen and vascular condition of structures which naturally are to be found there. The anatomy of the lining of the uterus and a knowledge of the changes occurring in this lining during the normal menstrual process naturally suggests the above explanation.

Clinical evidence clearly shows that most intense and chronic congestion of the uterus is associated with severe and chronic flexions. Menorrhagia is by no means present in all cases of severe flexion, but in a certain number of such cases there is very severe menorrhagia. The flexion does indubitably produce the bleeding in very many of such cases; and the bleeding occurs in consequence (1) of the mechanical impediment to the passage of blood through the capillaries of the mucous membrane. (2) Because of the hypertrophy and abnormal size of the vessels which permeate the mucous lining. According to this view the mechanical hindrance to the efficient circulation in the uterine vessels is the primary evil, and the presence of hypertrophy and vascularity of the mucous membrane the secondary one. Both co-operate in giving rise to hæmorrhage.

A further part of the explanation of the mechanism of bleeding from the uterine interior is the difficulty which the uterus experiences in getting rid of the effused blood. The blood collects in utero, distends it, and hence the area from which hæmorrhage occurs is increased (see chapter on Flexions, p. 215).

The case related at p. 149 is one which carries with it instructive inferences in reference to the etiology of menorrhagia, and particularly in regard to the connection subsisting between (1) chronic congestion, (2) chronic flexion, (3) chronic villous or fungous hypertrophy of the uterine mucous lining, and (4) severe hæmorrhage; for in this case, when the general congestion of the uterus was diminished (by straightening the uterus), the hypertrophic eminences previously engorged with blood became so much lessened in size that they had almost disappeared, and it became evident that what had been considered as fungous, possibly even malignant, growths from the interior of the uterus were simple congestive swellings of the mucous membrane.

The above is an explanation of the nature of the so-called *fungosities* of the uterine cavity which have attracted much attention as causes of menorrhagia, but the nature of which has not up to the present time been properly understood.

It is highly important to distinguish these simple hypertrophies from *malignant growths* within the uterus which may also assume the character of fungosities. Severe hæmorrhage may be produced by either simple or malignant growths in the interior of the uterus.

Defective Involution of the Uterus.—This is a cause of menorrhagia. The uterus is large and heavy, and blood is exuded freely from its interior. The condition is very analogous to that of chronic congestion, and, in fact, defective involution not uncommonly passes into one of chronic congestion.

Abnormal Conditions of the Os Uteri.—One of the most important of these, as a cause of menorrhagia, is *laceration of the cervix uteri.* I have seen some cases in which profuse menorrhagia was certainly due to this laceration.

Eversion of the lining of the cervix, whether or not connected with laceration of the cervix, may produce considerable loss of blood, the everted mucous membrane readily bleeding on friction against the floor of the vagina. The so-called "ulcerations" of the os are in many cases constituted by the abrasions in question.

Hypertrophy of the os uteri is not seldom associated with the foregoing conditions, and bleeding more readily occurs under such circumstances. The condition is important, because it might be mistaken for one of cancerous enlargement.

Small mucous polypi growing from the lip of the os uteri often occasion very profuse losses of blood, although they may themselves be no larger than a pea in size.

DIAGNOSIS.

The nature of every case must be adjudicated on its own merits. The foregoing account of the etiology and pathology of menorrhagia and metrorrhagia furnishes certain details on the subject. It must be needless to point out that a careful examination of the condition of the uterus and generative passages is essential, according to the methods described in other chapters.

In cases where unusual losses of blood have occurred, an important duty of the practitioner consists in the investigation and examination of the various substances, clots of blood, and the like which have been expelled. In order to institute a proper examination, an intimate practical knowledge of the normal anatomy of the ovum, and a familiarity with its outward appearance, on the part of the observer, are absolutely essential.

From a variety of circumstances, the substances expelled are frequently difficult of recognition; it is a good plan to place them in water for twenty-four hours, or even longer, at the end of which time they will be in a much more satisfactory state for examination. The importance of adopting this precaution in the examination in cases of suspected abortion it is impossible to over-estimate.

1. *An Early Ovum.*—If any portion of the body or members of the fœtus be found in the mass expelled, there can, of course, be no doubt in the matter; we have to do with an abortion. When no part or parts of an embryo are to be found, we proceed to search for one of the following structures: the decidua materna, or external envelope of the ovum; the decidua reflexa, internal; the chorionic villi; the umbilical cord, etc.

Moles.—An ovum, or some part of it, may remain in the uterus for a very considerable time, growing in an irregular abnormal manner, or just preserving a low form of vitality.

The "fleshy mole," as it is termed, consists of an ovum between the membranes of which blood has been effused. The blood effused has coagulated, and the result is a mass the parts of which are glued together and separated with difficulty. Organized membranes and chorion villi distinguish the "fleshy mole" from simple clots of blood, and from other substances presently to be more particularly considered. It must be recollected that the chorion villi do not become developed so as to constitute a placenta until near the fourth month of gestation.

There is another kind of true mole, the "hydatidiform" or vesicular mole, a description of which will be given presently.

2. *The Placenta.*—The size, shape, etc., of the mass, and the umbilical cord, would externally indicate it to be the placenta. The expulsion of a retained placenta is, at least when the retention has existed for some time, usually preceded by an offensive discharge; but the placenta has occasionally been discharged apparently fresh, and without signs of decomposition. In cases of abortion at the fourth or fifth month, the placenta may be retained for some time, its removal not having, for some reason or other, been effected at first. Cases are on record which show that the placenta may be retained within the uterus after abortion for months and even years. An instance in point is quoted by Montgomery from Morgagni.* More than one case of the kind has come under my own observation. Meanwhile, its presence in the uterus has generally occasioned severe hæmorrhages. An early placenta would be about the size of a pigeon's egg; later it would be larger.

3 and 4. *Fibrous polypi* of the uterus and *fibroid tumors* are sometimes expelled spontaneously from the uterus. Externally, these bodies might be easily confounded with a placenta, the more especially as the preceding hæmorrhages might be considered evidence of abortion having occurred. Polypus of the uterus and fibroid tumors frequently produce abortion; and in certain cases abortion may occur in the first place, and the expulsion of the polypus which gave rise to the abortion in the second. This happened, as I had reason to know, in a case under the care of a gentleman in the country; and the polypus which came away was considered, until after it had been more carefully examined, to

* *Op. cit.*, p. 259.

be the placenta. The structure of a polypus or of a fibrous tumor differs widely from that of the placenta, the former presenting a fibrous texture, generally dense, and sometimes very firm; but now and then, in the case of a polypus, more spongy and loose. The insertion of the umbilical cord would be, of course, wanting. Fibrous masses containing fatty matter within them, which I believe are instances of *fatty degeneration* of fibrous tumors or polypi of the uterus, are sometimes spontaneously expelled, as in a

FIG. 147.



case which I have placed on record,* or solidified by *calcareous matter*. Generally, we find a previous history of "frequent and severe hæmorrhages" when these uterine outgrowths have been expelled. The spontaneous expulsion here alluded to is not a frequent termination of their history. Masses of cancerous growths, in some rare instances slough away and appear externally. The cancerous disease is usually far advanced in such cases, and a digital examination would reveal the origin of the expelled body.

5. *Coagula of Blood* (blood-polypi).—Coagula may form

* "Trans. of Path. Society," vol. xi., p. 173.

within the uterine cavity in connection with uterine hæmorrhage of all kinds; after labor, in consequence of the presence of polypi, cancer of the uterus, profuse menstruation, etc. The uterine cavity is not, as a rule, very tolerant of the presence of clots; and for this reason they do not generally remain sufficiently long to become firm and dense. They are frequently connected with previous abortions. The accompanying drawing is one of a "Polypoid Hæmatoma" following an abortion at the second month. The remains of the chorion structures attached to the uterus form the pedicle of a mass consisting of blood-clot, the whole assuming a polypoid form.* When the coagula are tolerably recent, they are easily broken down under pressure, or after soaking in water. Fibrous organized bodies are not to be broken up in this manner. When polypi of the uterus are present, coagula sometimes come away having a circular form like segments of rings. The polypus at the same time excites hæmorrhage and prevents the escape of the blood; and the rings in question are thus formed. Coagula not recent may present a tolerably firm, dense, grayish, fibrinous-looking surface. The want of organization in the mass, the presence of blood-corpuscles, would assist in the diagnosis of the nature of the substance. The centre of the mass, moreover, generally exhibits a clot of a darker color, comparatively unaltered, which was the original nucleus of the formation.†

In respect to the size and shape of clots of blood expelled from the vagina, some peculiarities are sometimes noticed. Thus, in a case which fell under my observation—that of the sister of a medical man—a large clot of blood, having the size and shape of the vagina, had been occasionally expelled after much straining and pain, at the menstrual periods. It was found that the aperture of the hymen was excessively small, and, the discharge of blood being more profuse than usual, an accumulation and coagulation of the same in the vagina had occurred.

MEMBRANOUS FORMATIONS.—*Bodies more or less resembling "skin"* may be conveniently considered together under this designation. The skin-like substances in question may have their origin in the vagina or in the uterus.

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* Copied from Virchow's "Krankhaften Geschwülste," Band., i. p. 146.

† See an account of some specimens reported on by myself in "Trans. of Path. Society," vol. xv., p. 169.

1. *Exfoliations from the Vagina.*—Under certain circumstances the lining membrane of the vagina separates in the form of thin translucent flakes, which sometimes come away in great quantities. The flakes in question are composed of the scaly epithelium of the vagina, and under the microscope exhibit the well-known appearances of this form of epithelium. It is necessary to place them in water in order to render obvious the characters of these exfoliated products.

2. *The Dysmenorrhœal Membrane* ("menstrual decidua"—Farre).—This is an exfoliation of the lining membrane of the uterus—a sort of skin occasionally expelled from the uterus, independently of conception, after a catamenial period, and exhibiting a certain degree of resemblance to the decidua lining the uterus during pregnancy. The membrane is the mucous membrane of the uterine cavity, hypertrophied and cast off (see chapter on Menstruation, p. 49). Under the influence of certain conditions, the nature of which is at present not perfectly understood, but which probably have the effect of setting up a sort of chronic inflammation of the lining membrane of the uterus, its mucous membrane becomes sometimes greatly more thickened than usual, and being, in accordance with the ordinary rule, thrown off, it is presented externally. This is what appears to take place in these cases of membranous dysmenorrhœa. The membrane in question is smooth internally, rough and slightly flocculent externally. When thrown off in a single piece, the membrane presents three apertures, corresponding to the apertures communicating with the uterine cavity, and is of a pyramidal shape. It is expelled during the catamenial flow, which, as a rule, is more profuse than usual. It is unlike the vaginal exfoliations just alluded to, being very much thicker. The distinction of this dysmenorrhœal membrane from the decidua of an early ovum might, under certain circumstances, be difficult, as already stated, viz., when the supposed decidua is unaccompanied by any part of the chorionic structure. The concomitant circumstances will assist in the diagnosis; thus the "dysmenorrhœal membrane" is not expelled at one catamenial period only, but on successive occasions; whereas, in the case of an abortion, the same thing is not likely to occur, or, at all events, with the same marked periodicity (see chapter on Dysmenorrhœa).

3. *The Covering of the Early Ovum.*—Portions of the de-

cidua materna, the decidua reflexa, the chorionic sac, etc., may come away in the form of membranous substances.

4. *Exfoliations from the Bladder.*—The coats of the bladder have in rare instances been expelled; in cases related by Mr. Spencer Wells and others the whole lining of the bladder appears to have sloughed and to have come away by the urethra.

Vesicular Bodies.—*The Hydatidiform or Vesicular Mole.*—Little bladder-like substances, singly, or connected in series like beads, may be expelled from the uterus. These

Fig. 148.*



bodies were formerly considered to be hydatids formed in the uterus. They really result from certain alterations of the chorion villi, and they are always the result of conception. The embryo perishes at an early period, and the chorion villi continuing connected with the uterus maintain a slow growth, the *development* being arrested. The vesicular bodies are thus the result of dropsical swelling of the chorion villi. It appears that the period of pregnancy during which the chorion villi may take on this peculiar form of degenerative growth is limited, probably not later

* The drawing is a magnified representation of an early stage of the hydatidiform degeneration of the ovum, and exhibits very accurately the relations of the vesicular bodies, *b*, to the chorionic membrane, *a*, and the decidua serotina, *c*. (For further illustrations, see my papers in "Obst. Trans.," vols. i. and ii.)

than the middle or end of the third month. If the embryo perish after the chorion villi have become pretty intimately connected with the decidua serotina, but before the placenta has become formed, while the villi are allowed still to retain a certain degree of connection with the uterus, they may continue to grow; but *development* is arrested, and the bladder-like bodies are the result; such, at least, is my explanation of the formation of these bodies. Some eminent authorities consider it a disease of the villi *ab initio*.

With the presence of the vesicular mole watery discharges are occasionally associated. The mole in question may attain a considerable size, and may remain several months in the uterus, a few of the vesicles from time to time breaking and discharging fluid from the os uteri. The mass may come away altogether, or clusters of the vesicles may be expelled at intervals.

True hydatids may in very rare instances be expelled from the generative passages. They originate in the abdomen, bursting into this cavity from the liver; and they may penetrate through the uterus or into the vagina. True hydatids are closed sacs one within another; while the vesicular bodies resulting from chorionic transformation are arranged in a series like beads on a string, with slender peduncles or intervening connecting portions. The well-known "hooklets" are usually found when the cysts are really of hydatid origin. I have met with a case in which, death having occurred, several hydatid cysts were found in the abdomen, the pelvis, etc., and, had life been prolonged, some of these might have burst into the vagina or uterus. In the case in question, the patient was a young unmarried woman. I have also met with one case of true hydatids of the uterus, in which the organ contained bodies of undoubtedly hydatid character.*

Factitious Bodies.—Lastly, the observer must be cautioned as to the occurrence of cases in which, for a variety of reasons, women exhibit substances which they are desirous of leading the practitioner to believe have been expelled from the vagina. The careful examination of the bodies in question is, or should be, sufficient always to enable us to detect the fraud.

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* "Obst. Trans.," vol. xii., p. 237.

GENERAL TREATMENT.

If the blood be impoverished, the patient must be strengthened, the general health improved by careful hygienic measures, by good food, pure air, exercise, etc. Any special predisposing cause, the detection of which may require very careful scrutiny of the habits and previous history of the patient, must be removed. If, for instance, the patient be living in a malarious neighborhood, the residence must be changed. In cases where there is great torpidity of the system, congestion of the abdominal viscera, a loaded state of the bowels, and unhealthy state of the secretions generally, what may be termed a derivative plan of treatment, consisting in administration of brisk purgatives and such medicines as are known to excite action of the liver and chylopoietic organs generally is effective. In cases of great debility iron is necessary. A mixture containing very small doses of sulphate of magnesia, with a little dilute sulphuric acid and syrup, is exceedingly useful during the days of the profuse catamenial flow.

In cases due chiefly to general debility, from whatever cause, tonics and purgatives must be given together. For such, a colocynth and rhubarb pill twice a week, with iron and sulphate of magnesia in small doses, two or three times a day, may be recommended. To promote the action of the skin, to insure regular action of the bowels, and to improve in every possible way the general health of the patient, is to do pretty nearly all that can be done in the general treatment of ordinary cases of profuse menstruation not dependent on some physical derangement of the uterus.

The general treatment is particularly important in cases of women who have resided in tropical climates, such as India. The uterus and pelvic organs generally are found in such cases in a state of chronic congestion, there is profuse menstruation, together with leucorrhœa, and not seldom flexions are present. The flexion, of course, requires special treatment, but the general condition of the patient requires in such cases careful management. The only means of successfully dealing with these cases is to carefully supervise the performance of the functions generally, and especially those of menstruation, fecundation, etc., and to remove, by appropriate treatment, the diseased condition of the uterus, which is the cause of the symptoms.

When the circumstances of the patient admit of it, and the case is an obstinate one, great advantage will be derived from residence at a watering-place, where, for a variety of reasons, hygienic measures are better enforced and more easily carried out than at home. The remedies considered necessary, aperients, tonics, etc., are more efficacious also when administered in the form of mineral water. In selecting the spa, regard must therefore be had to the peculiar condition of the patient, and the cause of the menorrhagia (see Treatment of Chronic Congestion of the Uterus).

The daily use of the sponge bath is strongly to be recommended, the skin being well rubbed by a rough towel for some minutes afterward. The Turkish bath may be used in the treatment of certain cases of menorrhagia, in which there is defective activity of the skin, and in which sufficient bodily exercise cannot, for some reason or other, be taken. Experience has taught me that cold hip-baths are not usually to be recommended as a remedy for menorrhagia, although I was formerly inclined to consider them serviceable. Where hip-baths are employed the water used should be either warm or tepid.

In all cases where the uterus and pelvic organs are in a congested condition, the use of the vaginal douche is of most valuable assistance in the treatment. The means of applying this remedy will be found described in the chapter on Leucorrhœa.

It is of extreme importance to regulate the conduct of the patient at the menstrual periods. For two or more days previous to the expected period, and during the time at which the discharge is going on, the patient must be directed to remain as quiet as possible, and chiefly in the recumbent posture. The clothing must be light, the room should be cool. The bowels must be kept regularly open, and stimulant articles of food, as well as excessive eating and drinking, must be avoided. Sexual intercourse is to be prohibited. By adopting these simple precautions, much will be effected in diminishing the amount of the discharge.

Dr. John Chapman has introduced a method of treatment which has in some cases proved of service in cases under my own observation, viz., the application of cold to the spine by means of ice-bags. The cold acts directly on the spinal cord and indirectly on the uterus, leading probably to a contraction of the whole organ, and thus lessening the hæmorrhagic discharge.

In some few cases the loss of blood has been, or continues to be, so profuse that it is necessary to arrest it in a more summary manner; the patient has become so reduced that a further loss of blood is likely to be attended with grave consequences. For the treatment of this form of profuse menstruation, the general preventive means hitherto spoken of are most important; but something more is needed. In extreme cases it is necessary to arrest the further flow of blood in a mechanical manner—*i.e.*, by plugging the vagina. This will be best effected by inserting, by means of the Sims speculum, a piece of lint dipped in infusion of matico or tincture of sesquichloride of iron, or, which is still better, a saturated solution of perchloride of iron in glycerine, and one or two yards of wetted bandage, carefully packed in the vagina. This form of plug is very easily managed, as it admits of a portion, or the whole, of it being easily withdrawn. The bandage should be previously wetted by being squeezed out of cold water. Dr. Henry Bennet strongly recommends the plugging of the cervix uteri itself in order to restrain the hæmorrhage when very profuse. The patient must be directed to remain in the recumbent posture; cloths dipped in cold water should be laid over the pelvic region and removed and reapplied from time to time; or a cold wet napkin may be flapped upon the abdomen, so as to produce a sudden shock. Injection of cold or iced water into the rectum is also a most valuable means of arresting the flow of blood in bad cases of this kind. The object is to produce contraction of the uterus, for that organ is relaxed, congested, and in a condition very much resembling that which is present after labor.

The internal remedies to be made use of are, firstly, those which are known to induce contraction of the uterus; secondly, those which are known to have the power of arresting hæmorrhage—styptics, as they are termed. Ergot of rye and ipecacuanha have been found serviceable in cases of *post-partum* hæmorrhage; and they are applicable in the treatment of the severer forms of profuse menstruation also. I have myself had great success with the ergot, when all other remedies had markedly failed. A decoction of the fresh powder should be taken three times a day. Styptics are frequently found very serviceable; of these matico in combination with tincture of iron, or the latter alone in large doses (thirty to forty minims), are strongly recom-

mended. Matico has proved exceedingly efficacious in some few cases in which I have employed it. Gallic acid and diacetate of lead may be also employed. Opium is a remedy which has been highly extolled in cases of profuse menstruation, as also in hæmorrhages generally, but it does not appear to be adapted for chronic cases. Attention has been directed to digitalis administered internally as of peculiar efficacy in the treatment of profuse menstruation, but the results obtained in cases where I have tried it have not been altogether encouraging. In passive menorrhagia, Beau recommends rue and savin, in doses of rather less than one grain each.

In severe cases of profuse hæmorrhage, while measures are being taken to arrest the discharge of blood and to prevent further hæmorrhage, it is necessary to support the patient by administering stimulants and nourishment internally. The requirements in individual cases vary according to the urgency of the symptoms. Brandy and beef-tea or strong soup must be given frequently, but in small quantities at a time. It is possible to conceive a case—indeed, such are on record—in which transfusion may be necessary, and where the patient's life may be prolonged, if not saved, by timely recourse to this procedure.

It does not very often happen that a patient perishes from hæmorrhage due to simple profuse menstruation, but there are many cases where life, if not abruptly cut short, is materially abbreviated by the long-continued weakness and prostration thereby induced.

LOCAL TREATMENT.

The treatment is palliative or curative, one or both, according to circumstances. The case may or may not admit of absolute cure. When not curable, much may often be done to diminish the loss of blood at the menstrual periods by giving the patient directions as to her conduct during the time in question. Thus, in cases of cancer, of fibrous tumor, of flexion, etc., where it may not be proper, for a variety of reasons, to resort to more radical measures, rest, the horizontal position, careful diet, and the application of this system of treatment at and during each successive menstrual period, will do much to lessen the amount of the loss of blood. It is in these cases also that we occasionally find it necessary to apply measures for at once arresting

the discharge of blood, and which have been already pointed out. The discharge of blood may, under such circumstances, be such as to amount to a regular hæmorrhage, and must be treated as such; but, whatever its cause, the amount of discharge may be always very considerably reduced by the preventive and palliative measures which have been already alluded to.

With reference to the *curative* treatment of these cases of unusual discharge of blood from the uterus, and which are connected with the presence of organic or other disease, or in those very numerous cases in which flexions are responsible for the hæmorrhage, etc., we must be guided by the circumstances of the case. The proper radical treatment of the various pathological conditions of the uterus, etc., are elsewhere discussed under their proper heads. At present, some general observations will be made in reference to the treatment of these cases, so far as the hæmorrhage is concerned.

The loss of blood produced by organic or other disease of the uterus is often such as to necessitate the absolute removal of the cause of the discharge in order to save the patient's life. This is more particularly the case where polypus of the uterus is present. A minute mucous polypus growing just within the os uteri has been known to give rise to severe hæmorrhage; a pedunculated growth of this kind may occasion more hæmorrhage than a polypus of considerable size; and hence operations are demanded in order to restrain the hæmorrhage, with varying degrees of urgency in different cases. Hæmorrhage is not generally the only reason for deciding on operative or other measures for their removal.

In some cases our decision as to treatment will be affected by this consideration. The patient may be fast approaching the end of menstrual life, and it may be expected that the hæmorrhage, with the profuse menstruation, will disappear at the end of a short period. Such a view of the case may present itself to us where there are fibrous tumors in the uterine wall, projecting, perhaps, into the cavity of the uterus, and giving rise to the symptoms now under discussion. In many such cases, symptoms which, during menstrual life, are of great severity grow less, and the patient finds the inconveniences for the most part vanish with the arrival of the last menstruation.

The severe hæmorrhages produced by fibroid tumors not

seldom appear to depend to a great extent on obstruction to escape of blood from the uterus. Hence the operation of incising freely the cervix uteri is serviceable in certain cases.

In cases where there is reason to believe that abortion has, or may have, recently occurred, the first thing to be done is to ascertain whether any portion of the ovum or of its membranes remains in the uterus, and if so to remove it. Experience has shown that the retention within the uterus of a very small portion of membrane is sufficient to give rise to considerable and continued loss of blood. Where the os uteri is so closed that the finger cannot be easily introduced, it must be slowly and carefully dilated. The best method of dilating the os uteri for this and other purposes will be particularly described in the chapter on Dysmenorrhœa. The consideration of the treatment appropriate in such cases, however, falls more properly within the province of midwifery. It is sufficient here to insist on the necessity for completely emptying the uterus to check the hæmorrhage proceeding from this cause.

Of late years the practice of applying strong caustics to the interior of the uterus has been rather extensively followed. Applications were at first limited to the tincture of iodine, but undiluted nitric acid has been frequently used for the purpose. Again, it has been recommended that the interior of the uterus should be scraped by means of an instrument for the purpose—a curette—the object in both methods of treatment being to burn away the surface of the uterine lining, or to remove it. These methods of treatment have always appeared to me unnecessary, and it has been shown by reports of cases which have been published that occlusion of the os uteri and destruction of the normal uterine functions have followed these procedures in some cases.

In regard to the injurious effects of the scraping process Dr. Emmet says that he has known peritonitis, cellulitis, pelvic abscess, and even death occur on removing growths from the interior of the uterus by means of the curette, and he approves of Dr. Thomas's blunt copper-wire curette, which compresses the lining without removing it.

In regard to the injurious effects of the cauterizing process, Dr. Wiglesworth * recorded a case in which occlusion

* "Obst. Journ.," vol. lxx., p. 622.

of the os, and suppression of menstruation occurred as a result of application of fuming nitric acid to the whole interior of the uterus, and he forcibly directs attention to the sterility necessarily so produced. In another paper he records two more cases in which the same result occurred. Dr. Playfair* considers that Dr. Wiglesworth's case teaches necessity for caution in the use of nitric acid. He prefers carbolic acid in a tolerably concentrated form. Dr. Edis, writing on the same subject, states that in two cases he had observed somewhat similar results to those above related.

As supporting the views above given as to the true explanation of these cases may be cited a paper by Dr. G. H. Lyman.† He advocates the dilatation of the cervix uteri for the cure of uterine hæmorrhage. In four cases dilatation was performed for the purposes of diagnosis, and so marked was the relief from the hæmorrhage that his attention was aroused to dilatation as a means for arresting the hæmorrhage. Dr. Lyman considers that it acts by relieving the constriction at the internal os, and thus relieves the congestion of the tissues above that point.

For Dr. Thomas's opinion on the subject see chapter on Leucorrhœa.

The so-called fungosities which are supposed to be removed by the procedures above mentioned appear to be merely the unduly vascular mucous membrane. It is more rational to endeavor to reduce this vascularity than to destroy the membrane. As to the efficaciousness of this cauterizing method of treatment it does not appear that the results are very encouraging, the operation requiring, according to Dr. Thomas (see his last edition), frequent repetition before a cure can be effected.

When cauterizing applications are made to the interior of the uterus it is necessary, in the first place, to dilate the cervical canal. If strong nitric acid be applied, an ebonite cervical speculum, as devised by Dr. Atthill, is required, through which the probe carrying the acid can be introduced. It has been found to be dangerous to inject caustic fluids into the uterus without previous free dilatation of the cervical canal; hence, if tincture of iodine or other such

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* "Obst. Journ.," vol. lxi., p. 694.

† "Transactions of American Gynæcological Association," in "Amer. Journ. of Obst.," vol. x., p. 526.

fluid be so employed, the previous cervical dilatation is imperative.

The general conclusion to be drawn from the facts which have been collected on the subject is that intra-uterine medication for the relief of hæmorrhage is so far good that it implies an opening, or indeed a dilatation, and certainly a straightening of the uterine canal. One effect it certainly has, though it does not seem to have been contemplated by those who have practiced it (with the exception of Dr. Lyman), viz., that it promotes the "drainage" of the uterine cavity. I have always considered this latter indication as a most important one, and the practical inference is that the dilatation or straightening of this canal will be found to be all that is required in the majority of cases.

A final word must be added in reference to the efficacy of removal of the ovaries, by the operation now known as Battey's operation, for the cure of menorrhagia. Cases do occasionally present themselves in which the tendency to hæmorrhage is so great from fibroid growths in the uterus, and possibly in some other cases, that this operation seems justifiable. (See further remarks on subject of this operation in chapter on Ovariotomy.)

CHAPTER XXXIV.

DYSMENORRHŒA.

Meaning of the Term—PATHOLOGY—Essentially a Symptom indicative of Obstruction to Escape of Menstrual Fluid—Seat of the Obstruction, mostly at the Internal Os Uteri—*Modus Operandi* of Obstruction at this Position—Severity and Intensity of the Pain—Nausea and Vomiting accompanying Dysmenorrhœa—Causes of Obstruction at various parts of the Canal of the Uterus enumerated—Inter-menstrual Dysmenorrhœa—Membranous Dysmenorrhœa.

Pain during Menstruation due to other Causes than Obstruction to Escape of Menstrual Fluid—Disordered Ovulation—Rheumatic Diathesis—Neuralgia.

TREATMENT.—General Remarks—Rectification of Shape of Uterus—Dilatation—Incision of Canal—These Methods Compared—Their Applicability to the various Cases pointed out—Postural Treatment—Palliative Treatment—Internal Mechanical Treatment—Treatment of Imperforate Os Uteri—Treatment of Membranous Dysmenorrhœa.

The term "dysmenorrhœa" has been long employed to denote the presence of pain or difficulty, one or both, at-

tendant on the performance of the function of menstruation.

Hardly two patients suffer alike during menstruation; and we see a regular gradation between cases in which there is very slight suffering, and others in which the agony is such as to be almost unendurable. The pain also varies in its position, but it is for the most part referable to the uterus; and, in the cases where there is most pain, it is generally identical in position with that of this organ. Pains of various degrees of intensity may be felt at other parts of the body; but they are added, so to speak, to the other—the essential pain—which is situated in or about the pelvic region.

What is the relation of the pain to the flow of the menstrual fluid? This, being the vital point of the whole question, demands our earnest attention.

We find in practice several variations in respect to the manner in which these two things, the pain and the flow of the fluid, are related one to the other. In some cases it will be found that the menstrual fluid escapes from the uterus from the first; the patient having little, but only a little, to complain of during the whole menstrual period, while in other cases, on the contrary, the appearance of the menstrual fluid is delayed for a certain time, and in the meanwhile the patient suffers more or less severely from pain; the discharge appears, and the pain thereupon quite or almost completely ceases. In other instances the pain is present intermittingly more or less during the whole of the period.

PATHOLOGY.

Dysmenorrhœa is to be regarded as a symptom indicating, in almost every instance, an impediment to the escape of the menstrual fluid from the uterus, and this view of the subject, which was put forward in the first edition of this work (1863), has received very general (though not unanimous) adoption by several other writers, although quite recently attempts have been made to revive in a modified shape the older views entertained on the subject. Before the existence of flexions of the uterus was recognized, the sole "obstructive" cases of dysmenorrhœa were those in which the external os uteri was found small and narrow. But the "obstructive" cases, it can now be shown, are much more numerous, and they include very many instances

where the *internal* os uteri is the seat of obstruction to the escape of the menstrual fluid.

Pain during the menstrual period is not exclusively due to obstruction to escape of menstrual fluid; for there are cases in which the source of the discomfort is to be sought elsewhere. But the "obstructive" theory applies widely and generally to most cases, those not coming within it constituting the exceptions.

There has been considerable dispute as to the *seat of the obstruction* in cases of dysmenorrhœa. On the one hand, the *external* os uteri is still held by some authorities (Dr. Barnes, for instance) to be the almost exclusive seat of obstruction; on the other hand, the *internal* os uteri is held by other and numerous authorities to be the point where the obstruction occurs.*

Opinions so widely differing and held by equally eminent authorities may seem difficult to reconcile. The point is certainly of the greatest practical importance. The circumstance that in many cases of dysmenorrhœa the internal os allows a tolerable-sized sound to pass through it, has been held by some eminent practitioners (Dr. Bennet, Dr. Tilt, and others) to prove that there is no stricture at this point. But the stricture may nevertheless virtually exist at the internal os, in consequence of flexion of the canal, the flexion acting as an obstacle to menstruation, but not preventing the passage of the sound. When the uterus, as is often the case under such circumstances, is unduly soft, the sound may open out the flexion as it passes in. Here lies one source, at least, of the apparent discrepancy. The least bending of the uterus at the internal os will thus cause obstruction. I agree with Dr. Marion Sims, Dr. Savage, Dr. Greenhalgh, and others, in regarding the internal os as by far the most common seat of obstruction. The cause of such obstruction at the internal os is, according to my experience, almost invariably a flexion of the uterus. Other causes may give rise to obstruction, but the percentage of such cases is small. The curve described by the uterus in cases of flexion is, it must be remembered, not always the

* Many of the various arguments and statements put forward by those who have in public discussed this subject will be found in vols. vii. and viii. of the "Obstetrical Transactions," in the reports of the discussions on the subject at the meetings of the Obstetrical Society of London. See also a paper in the "Obstetrical Transactions," by Dr. Barnes (vol. xiv., p. 108), on the "Essential Cause of Dysmenorrhœa."

same. The flexion may be seated *below* the internal os, at the middle of the cervix, in fact; here the obstruction is not seated, of course, precisely at the internal os, but at a point below that. These latter cases are for the most part those described as "conical" cervix, and they are not unfrequently associated with dysmenorrhœa. But I do not think they occur so frequently as Dr. Barnes believes.

The essential part of menstruation, so far as the uterus is concerned, appears to be growth, thickening, and increase of vascularity in the mucous membrane lining the body of the uterus; the tissue of the uterus itself being also congested, and the venous plexuses situated around this organ being at this time filled and gorged with blood. The menstrual blood is poured out by the mucous membrane of the body of the uterus. At the point where the cavity of the body of the uterus and the cervical canal join, the canal is narrow; so narrow, indeed, that in women who have not borne children it usually admits easily only an instrument having a diameter of an eighth to a quarter of an inch. Hence it follows that, in a by no means insignificant proportion of cases, the internal os uteri, as it is termed, is so narrow that very little is needed to close it altogether, or at all events to so close it that the escape of fluid from the uterine cavity is rendered difficult. Moreover, during the menstrual period, fluid containing minute shreds of broken-down membrane has to be discharged from the cavity of the body of the uterus. The internal os is the central and smallest part of the uterine canal. It is surrounded by the firm, resisting, fibro-muscular tissues of the uterus, the uterine walls being at that situation, as already remarked, rather thinner than elsewhere. In the ordinary course of things, the menstrual products pass through this narrow canal slowly, but continuously, the size of the passage being sufficient to drain the uterine cavity and discharge the fluid as fast as it is poured out from the lining of the body of the uterus.

The patency of a tube is greatest when it is completely circular in shape. Flatten the tube, and at once its calibre is diminished. Carry the flattening process far enough, and we extinguish the tube altogether. It so happens that the internal os uteri—the narrowest part of the tube—is coincident with the middle of the uterus, the situation at which, in cases of flexion-distortion, the bend is most usually found to occur. The physical relations of the parts are

such that a certain flattening of the canal is inevitable when the uterus is bent at this situation. The flattening occurs

FIG. 149.



FIG. 150.



from before backward. It varies in degree, according to the degree of the flexion and other circumstances, and it is

demonstrable, from anatomical considerations alone, that flattening and consequent impairment of the patency of the canal must inevitably occur when the uterus is decidedly flexed, and thus distorted. This is so obviously true that it seems almost unnecessary to insist upon it. In Figs. 149 and 150, representing respectively anteflexion and retroflexion, the manner in which the uterine tube becomes compressed is rendered evident.

But we may go a step further. It is probable that during menstruation the internal os uteri is capable of becoming to a certain extent dilated so as to more readily allow of the escape of menstrual products. It is believed by some that the internal os uteri has a regular sphincteric action, expanding and contracting according to circumstances. It seems probable that in a state of perfect health no such expansion is required to allow of escape of menstrual products; but it is quite certain that such expansion is required if the menstrual *débris* be unnaturally solid or bulky; and it is quite possible that the internal os does undergo expansion to a certain extent, even in less abnormal cases. But I would direct attention to the fact that, if the uterus be decidedly bent, such expansion of the internal os must be very materially interfered with. The tissues around the internal os are necessarily compressed and rendered harder and more resisting by the mere fact of the existence of the bend. The flexion occasions not merely a flattening of the canal, but a condensation of the uterine tissues in the neighborhood, such as would directly and forcibly resist any expansion and dilatation of the tube. The patency of the uterine tube, under ordinary circumstances, is, in short, dependent on the uterus preserving its proper form, and thus allowing the canal to remain circular in shape.

Stricture of the internal os uteri has been very frequently assumed to be present when the canal was simply very much bent at that point. The condensation and hardening around the narrow portion is undoubtedly often great in long-standing cases, and a veritable stricture not seldom exists. But at first it is not so, the canal admitting of easy passage of the sound if the point be only directed properly and in conformity to the bend of the uterus. All cases of dysmenorrhœa are not due to flexion, but the vast majority of them come under this category: marked dysmenorrhœa will, unless in a very few and exceptional cases, be found associated with undoubted flexion of the uterus.

In a very interesting paper Dr. Herman* records observations on 111 patients "under treatment for local contagious disorders," his object being to determine whether painful menstruation is more common in women who have acute flexions of the uterus than in others. He found that of

43 cases where the uterus was straight	12	had much or bad pain	}	29 per ct.
14 cases of slight anteflexion . .	5	" "		
30 cases flexion a right angle . .	9	" "	}	30 per ct.
23 cases flexion an acute angle . .	7	" "		

—thus proving, as Dr. Herman considers, that the degree of bending has little influence on the severity of the pain.

Objections to the validity of these conclusions obviously suggest themselves. One principal objection to my mind is that no distinction is made as to the softness or hardness of the uterus, in the above cases. This would affect the question materially. If the uterus were very soft, an acute flexion might not necessarily produce pain during menstruation, for the uterine congestion then might straighten it. I have known this to occur. Again, flexion might be present during menstruation and not at other times, and would thus escape notice. Further, the degree of hardness is important, inasmuch as an acutely flexed uterus which had become hard would be more likely to occasion severe dysmenorrhœa. One most important reason for contesting the validity of the conclusions drawn by Dr. Herman from his cases is that, having particularly devoted attention to the effect of treatment of uterine flexions on the dysmenorrhœa so often associated with them, I am unable to recall to mind a case in which the dysmenorrhœa was not markedly relieved if not completely cured by measures directed to the straightening of the uterine canal. In cases of anteflexion causing dysmenorrhœa, I have used the cradle pessary with unquestionable benefit for many years past.

Here may be mentioned also a paper by Dr. Godson † "On Spasmodic Dysmenorrhœa associated with Sterility," in which he proposes to drop the term "obstructive," as he knows no evidence to prove that there is a want of patency of the cervical canal. But Dr. Godson treats his cases nevertheless by dilating bougies, whereby it would seem to be implied that something of the nature of an obstruction

* "Obst. Trans.," vol. xxiii., p. 217. † Ibid., vol. xxiii.

exists at that part of the canal subjected to the dilatation. Dilatation so employed is synonymous with straightening, and it is indeed a very efficacious means of straightening the uterine canal. Spasmodic action of the fibres surrounding the internal os might give pain, but it would also possibly occasion obstruction to escape of menstrual fluid, and thereby set up spasmodic action of the *whole of the fundus.* Supposing that we start, therefore, from the hypothesis of cervical spasm as a cause of dysmenorrhœa, we appear to be conducted to the "retention" view. It has been asserted that the sound can be easily passed into the uterus during the menstrual flow, and while the patient is suffering, but this by no means proves absence of obstruction to escape of fluid or menstrual *débris*, for the uterus may be so much flexed as to create obstruction, while the sound may be made to enter, *straightening the canal in its passage.*

Why, it may be asked, do we find that many cases of dysmenorrhœa are relieved by simple observance of the recumbent position during the period? Simply because the existing flexion is thereby somewhat diminished, the canal is a little straightened, and the escape of the uterine contents is thus rendered more easy. The pain which accompanies difficult menstruation is due to *the existence of an impediment to the escape of the fluid.* The pain appears to be partly due to the distension of the uterine cavity, causing compression and tension, and congestion of the body of the uterus, but chiefly to actual muscular contraction of the uterus; in fact, to a "pain" similar to those witnessed in parturition, though on a smaller scale. The body of the uterus contracts, and in the end generally succeeds in expelling its contents. In so doing, the internal os uteri must become dilated, in order to allow of the passage of fluid or the *débris* of membranes or clots. In cases of flexion, when the malady is not of very long duration, the contraction of the uterus seems to have a straightening effect on the uterus, and when this occurs the canal is thereby opened to a certain extent, and the uterine contents escape. But in severe or long-standing cases the circumstances are such that the uterus has no power of straightening itself, and then we find that the process of emptying the uterus is a very slow one; the pains recur from time to time with little relief, and the catamenial period is both contracted and painful. In cases of the latter description, a frequent phenomenon is the abrupt cessation of the flow for a certain time—a few hours or longer

—after which the pain and discharge again recur. A further phenomenon, traceable to the same cause, is a certain dilatoriness in the appearance of the discharge. The fluid observed at first is very slight in amount, or there may be none at all for the first day or two, during which time, however, pains are more or less frequent; also a protraction of the period, together with alteration in the character of the discharge from red to brown, and later on to a still lighter discharge, evidencing that the retained contents of the uterus are now mixed with a fluid of a non-sanguinolent character.

In an extremely able article "On the Polar Divergence of the original Natural Forces in the Womb at the time of Pregnancy, and their Mutual Exchange at the time of Labor as a Contribution to the Physiology of Pregnancy and Labor," Dr. Champneys* has recently revived a doctrine enunciated by Reil in the "Archiv. für Phys.," 1807.

The substance of Reil's argument is that in the unimpregnated uterus the forces stand in equipoise. When impregnation occurs the expansive force obtains the advantage first in the fundus, from thence farther and farther through the whole substance, driving the contractile force toward the opposite pole, until this latter, driven toward the extreme point, springs over from the neck to the fundus, and at this moment gives the signal for the commencement of parturition.

"The contractile force," says Reil, "more and more pressed back from the fundus toward the opposite pole, takes refuge in the extreme point of the neck, until it is even here overcome by expansion, which mostly happens with one bound and in a moment of time, as I shall show by examples. At this moment follows the change of the poles in the magnetic line." Then follow the labor pains, during which the plus of contraction lies at the fundus and the plus of expansion at the neck. After the end of the labor the oscillations cease, contraction possesses itself again of the whole substance of the uterus. Reil adduces a case of abortion at the third month, where the cervix, which had been closed, hard, and narrow, became soft and expansible where a moment before all had been still hard and inexpansible.

Dr. Champneys proceeds to apply these doctrines of

* *Obst. Journ.*, No. 82, Jan., 1880, p. 609.

uterine polarity to the phenomena observed in dysmenorrhœa and menorrhagia. Thus, he mentions a case of menorrhagia in which, after dilatation by a series of bougies up to No. 18 size and administration of ergot, relief was obtained. "Whatever was the cause of the frequent menstruation in this case," says Dr. Champneys, "it seems that dilatation of the cervix altered the conditions and restored the natural rhythm, I believe by the operation of Reil's principle." Again, in reference to the so-called cases of "spasmodic" dysmenorrhœa, Dr. Champneys considers that these cases should not be classed under the name "obstructive." These cases are, he states, often cured by use of a bougie, "but the fact that the bougie cures them does not prove obstruction, for in many of them a large bougie meets with no impediment even during the paroxysm, and a sound as a rule passes with ease."

I have observed in my own practice cases resembling those alluded to by Reil and Champneys, in which the transition from contraction to expansion at the os uteri was observed to occur with remarkable suddenness, and in such a manner as to favor the theory of polarity enunciated by Reil. A case particularly I have in my mind, where the cervix had been under expansion by a dilator to relieve sickness at the third month of pregnancy. In this case there was a sudden transition from resistance to great expansibility observed at the os uteri.

Dr. Champneys' extension of Reil's theory to the explanation of menorrhagia and dysmenorrhœa is ingenious. Dilatation of the os uteri by tents or bougies has the effect, as I presume he would argue, of transferring contraction from the os to the fundus, or *vice versâ*, of transferring relaxation from the fundus to the os uteri. Now it may very well be that this is so, but the operation in question has other effects also which have to be taken into account in explaining the results observed. Those other effects are (1) straightening of the canal, and (2) increase in the size of the canal. Either one of these effects would be likely to be followed by relief. Dr. Champneys objects to the term "obstruction" in cases where "a large bougie meets with no impediment," but there are cases in which the uterus has a retort shape, and in which the sound passes without apparent obstruction, owing, as I have already stated, to the fact that as it enters it straightens the uterus and removes for the moment the obstruction—namely, the flexion

of the uterus. So again, in cases of menorrhagia due to pouching of the uterus and retention, the use of bougies removes the "obstruction," which is not the less real because the sound apparently encounters no impediment.

It does not appear, in short, to me that it is necessary to revert to Reil's theory of polarity in order to explain the beneficial influence of dilating the cervical canal for the cure of dysmenorrhœa and menorrhagia. These beneficial effects are probably mainly connected with the production of a free and ready outlet for the discharges from the uterine cavity—free drainage in fact. Further, artificial mechanical expansion of the cervix would be likely by reflex action to excite contraction of the fundus. It is to be remarked that the necessity for the use of dilatation implies some abnormal condition of the os uteri. The question is, What is that abnormal condition? The condition is probably not always the same. In some cases there is general softness, flaccidity, and pouching of the uterus; here straightening, free outlet for escape of fluid, and the excitation of uterine contraction in the fundus, by reflex action or altered polarity (Reil and Champneys) are beneficial. In some cases, again, there is a contraction and condensation of the tissues around the internal os uteri due to flexion, perhaps of some standing, and the dilatation and straightening of the canal relieves this, accomplishing the object by actual stretching of the condensed tissues. There are two types, between which there are many varieties.

In regard to the sufficiency of the canal to allow of the passage of fluid, it must not be forgotten that the *quantity* of the fluid varies in different cases; a canal which may be a very sufficient outlet in one individual or under one set of circumstances may be inadequate in another individual and under different circumstances. There are other things to be considered also, in respect to each of which considerable variations are observed; the state of vascularity of the uterus itself; the state of vascularity or fulness of the surrounding organs.

The uterus is liable to certain morbid alterations in textrue which may still more materially affect the patency of the canal of exit. Thus, within the tissue of the uterus frequently grow fibrous tumors, which may, and do occasionally, encroach on the canal, and thus constrict it. Fig. 151 represents a case of this kind. The same result may be produced by polypi growing within the uterine cavity it-

self; and occasionally we find the whole cervix uteri congenitally narrow, from an apparently defective development of this part of the generative organs. A very important class of cases is that in which the lower segment of the uterus—the cervix—has become hypertrophied, indurated, and otherwise diseased: here the canal may be contorted and twisted in such a way that the extra amount of congestion which occurs at menstruation so swells out the cer-

FIG. 151.



vical tissues as to seriously affect the patency of the canal.

These considerations are sufficient to show that we have not far to go in order to find a number of conditions capable of producing constriction of that canal by which the menstrual fluid is evacuated from the uterus. Conditions of the kind alluded to are known to be associated with severe dysmenorrhœa; and the pain in such cases is ac-

counted for by the retention, temporary or partial, which may be present under these circumstances.

Other arguments for the truth of the explanations now offered may be drawn from the facts, that, in the first place, dysmenorrhœa of the kind now under consideration is very frequently associated with sterility (see statistics on this subject at p. 221); that, in the second place, it is not observed in women who have had children, unless in connection with some recognizable and very obvious alteration in the cervix uteri of such a nature as to interfere with the patency of the canal, which is sometimes the result of the parturient process; and, in the third place, from the results obtained by mechanical treatment for improving in various ways the patency of the utero-cervical canal.

A careful study of the symptoms and phenomena observed in cases where actual obliteration of the os uteri, permanent or temporary, has been known to be present, the menstrual product having been retained within the uterus and unable to escape, throws a considerable degree of light on the question now under discussion. In the work of Bernutz and Goupil * we find collected a very large number of accurately observed cases in which the kind of menstrual retention now alluded to was unquestionably and demonstrably present; and means are thereby afforded for studying the subject analogically, so to speak. The difference between the two classes of cases—those in which there is complete menstrual retention, as in the instances just referred to—and those in which there is what may be termed incomplete or partial menstrual retention—is only one of degree.

The cases which have passed under my own observation have offered the strongest possible confirmation of the truth of the position now maintained, that in ordinary cases of dysmenorrhœa, in which there are, first, pain, and, after a variable time, appearance of a discharge, what we have before us is really *partial but temporary menstrual retention.*

Naturally, the cavity of the uterus is very small, and capable of containing but a very small quantity of fluid. Different individuals bear dilatation of the uterine cavity very

* "Clin. Méd. sur les Mal. des Femmes," tom. i. (Paris, 1860). See also the English edition of this work by Dr. Meadows, issued by the New Sydenham Society.

variously; and hence it follows that retention of menstrual fluid within the uterus may produce different degrees of pain and various degrees of suffering in different individuals.

The *severity* and *intensity* of the pain in cases of dysmenorrhœa is open, as already stated, to much variation. It is sometimes so severe that the patient rolls on the ground in agony; it is not seldom so severe that for a day or two the patient is obliged to seclude herself from society, and is confined to her bedroom. In some rare cases the reason itself is disturbed by the excruciating and intense pain which is felt.

Inter-menstrual Dysmenorrhœa.—A variety of dysmenorrhœa has been described under the term "inter-menstrual dysmenorrhœa." Cases now and then occur in which about midway between the ordinary menstrual periods there are observed attacks of pain like those at the ordinary period. And in these cases there is a considerable regularity in the onset of such attacks. Dr. Priestley read a paper on this subject at the Royal Medical and Chirurgical Society some few years ago. I have seen a few cases of this kind having the characters described by Dr. Priestley. In the cases observed by myself the attacks appeared to be associated with expulsion of a leucorrhœal fluid from the uterus, the fluid being retained in consequence of a chronic flexion. Dr. Fasbender* gives a case of severe dysmenorrhœa in which the patient, single, aged 24, had suffered for two years from this inter-menstrual pain. The uterus was sharply anteflexed, and "endometritis" was present. The patient was entirely cured by use of an intra-uterine pessary.

Nausea and vomiting are symptoms which very frequently accompany the pain of dysmenorrhœa. This is a point which has as yet not attracted the attention it merits. Here it may suffice to say, that nausea and vomiting are by no means uncommonly observed, and sometimes with excessive severity in cases of dysmenorrhœa due to chronic flexions of the uterus.

The *causes of obstructive dysmenorrhœa* are:

Flexion of the uterus (most usually at the situation of the internal os uteri) occasioning a virtual stricture of the canal at its narrowest part. Ante- and retroflexion equally are capable of giving rise to mechanical difficulty.

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*"Zeitsch. f. Geb. und Frauenk.," vol. i., No. 1.

Congenital narrowness of the cervical canal, in association with *an infantile uterus*.

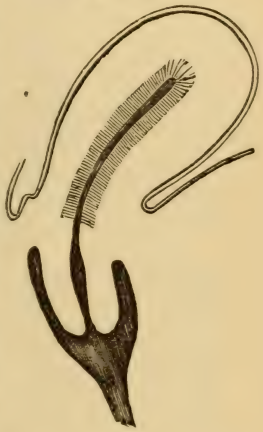
Congenital narrowness of the os internum—the junction of the cervical canal with the cavity of the body of the uterus.

Congenital narrowness of the os externum uteri; not so commonly a cause of dysmenorrhœa as of sterility. Undue congestion and hypertrophy of the lining membrane of the cervix uteri, the canal being of the ordinary dimensions.

Increased flow of blood from the interior of the uterus, the canal of exit being insufficient for the ready escape of the blood.

Fibroid tumors growing in the thickness of the uterine wall, and so placed as to compress or distort the cervical canal. These tumors most commonly produce dysmenorrhœa when situated in the anterior wall, and generally occasion also some degree of flexion of the uterus, whereby the difficulty is aggravated. The most severe forms of dysmenorrhœa are witnessed among this class of cases.

FIG. 152.



Chronic congestion of the uterus itself, associated with slight degrees of flexion, or with other of the conditions above enumerated.

Small intra-uterine polypi hanging down within the cervical canal and acting as a plug, thus preventing the ready escape of the menstrual fluid.

An elongated condition of the vaginal part of the cervix, often associated with flexion of the canal at about its middle, or opposite the point of reflexion of the vagina on the cervix (see Fig. 152).

Contortion of the cervical canal dependent on an irregularly hypertrophied condition of the cervix. This is a condition not very uncommon, as the result of chronic inflammatory action in the part in question.

Membranous Dysmenorrhœa.—Under this term are included a class of cases possessing peculiar interest, in which, at each menstrual period, or very frequently so at all events, a membrane is discharged. Scanzoni held that exfoliation

of the mucous membrane occurs more frequently than is ordinarily supposed. He found portions of the mucous membrane in 14 out of 21 cases of dysmenorrhœa, when careful search was made for it. This is what we should indeed expect, if the partial exfoliation or destruction of this membrane occurs at each period under ordinary circumstances. It is, however, rare to meet with cases of exfoliation of the membrane in an entire piece, or to meet with

FIG. 153.*



pieces of any considerable thickness, and to cases of the latter class only does the term "membranous dysmenorrhœa" apply. There appears to be no doubt whatever that the membrane discharged in these cases is really the uterine mucous membrane, but whether it is an accidental thickening due to excessive growth, or to pregnancy, is not certain.

* This drawing, made for me by Mr. Tuson, represents the uterine lining expelled nine weeks after a catamenial period. There was no trace of an ovum nor evidence of attachment of one. The flocculent shaggy external aspect and the smooth velvety internal surface are well shown. The patient had had one child, and thought she was pregnant.

The expulsion of the membrane is attended usually with pain, just as happens in abortion, and this pain is of precisely the same character as in abortion, and indeed as in cases of menstrual retention just described.

In one case it was stated that the membrane was discharged usually not later than twenty-four hours from the time of the commencement of the discharge. At this time there was a stoppage of the discharge for an hour or two, the bag of membrane then coming away, its expulsion being attended with severe pain, and the discharge continuing uninterruptedly for three or more days.

In another case, that of a lady, æt. 34, who had been married for thirteen years, never pregnant, a membranous bag, complete or in shreds, had been expelled at almost every menstrual period. The body in question made its appearance always within the first few hours after the discharge had begun to flow.

In both of these cases the interval between the catamenial period was long—five weeks—and in both the membrane actually expelled belonged to, or was the product of, the former menstrual period. If, normally, the menstrual decidua is thrown off from the uterus after the discharge has ceased, or at all events during the latter period of the discharge, it would appear that in these cases this exfoliation was postponed, the membrane continuing to grow during the inter-menstrual period.

Dr. John Williams* thinks the dysmenorrhœal membrane is the decidua ordinarily shed, and that it is expelled in these cases as a whole or in masses in consequence of an excess of fibrous tissue in the wall of the uterus, the excess being due to imperfect evolution at puberty, imperfect involution after parturition or abortion, or the product of acute inflammation. The inflammation is the result of the expulsion of the masses. To effect a cure he believes that the structure of the whole of the body of the uterus must be altered.

The late Dr. Beigel,† in a paper on the subject, considered that it arises from a pathological change in the mucous membrane, which, in consequence of excessive cell proliferation, is separated from the surface and falls off in flakes. Microscopically he found the normal elements in-

* "Obst. Trans." for 1877.

† "Archiv f. Gynæk." Band ix. Heft 1 (1876).

creased in some cases, in others single elements—glands, epithelium—lost or degenerated; in some he found embryonal cellular tissue; in all cases he found round free cells formed which cause the separation. He believed that the membrane is not the result of conception.

Dr. Gautier (Geneva)* believes it to be a desquamation affecting not only the epithelial layer, but a portion also of the sub-epithelial structure analogous to that observed in certain affections of tegumentary or mucous surfaces. He likens it to ichthyosis, and suggests the term for it of "uterine ichthyosis."

Sterility appears to be very generally associated with membranous dysmenorrhœa. It appears also that while in single women the cast of the uterine cavity comes away in detached fragments, the perfect casts of the uterine cavity are only observed in married women. Hence it has been asserted by some—Haussman, for instance—that these casts are really abortions. No doubt early abortions may be mistaken for membranous menstruation, and in fact the dysmenorrhœal membrane closely resembles the thickened decidua of the first month of pregnancy. From what is known, however, it appears that the casts of the uterine cavity may appear when there has been no possibility of their being due to conception. But there may occur expulsions of a membrane due to conception alternately with a membrane not originating in this way.

It is certain that in some of the cases the uterus is in a state of chronic flexion. And it may be that the morbid condition in question is really due to chronic congestion of the lining of the uterus, kept up and perpetuated by the flexion and obstruction at the internal os thereby produced.

Disordered Ovulation.—"It is probable," says Dr. Farre,† "that when the follicle or the entire ovary becomes tense from the effusions which have been shown to have taken place ordinarily within it, and this tension is not relieved because rupture does not occur at the proper time, so that *ovulation is disappointed, or is aberrant*, the symptoms which might be expected to accompany such an interrupted process would be those which are usually set down as indicating inflammation in a part."

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* "Essai de la Pathogénée de la Dysménorrhée membraneuse." (Geneva, 1878).

† "Cyc. Anat. and Phys.," article Uterus, p. 576.

I must confess that I have met with very few cases in which pain during menstruation could be traced directly to the ovaries. In many cases of anteflexion of the uterus a pretty constant pain in the region of the ovaries is frequently observed which disappears on altering the position of the uterus, showing that it is not, in such cases, located really in the ovary. It is not denied that ovaritis and pain due to ovaritis are observed; but this does not appear to be common.

In cases of *displacement of the ovary* when the organ is low down in the Douglas pouch, a condition sometimes associated with retroflexion of the uterus, the ovary is extraordinarily sensitive and painful to the touch, and dysmenorrhœa observed in such a case would no doubt be aggravated by the presence of such displacement.

General Abdominal Congestion, Derangements of Digestion, etc.—Women who are the subjects of chronic uterine disease of various kinds, and who habitually experience more or less pain in the pelvic organs, naturally suffer more at the menstrual periods. Those who have a congested, overloaded condition of the abdominal viscera, suffer more at the menstrual periods than others. A sedentary or a too luxurious mode of life rarely fails to give rise to the congestion in question. Derangement of the digestive organs to a marked extent is usually present under such circumstances.

The complication of dysmenorrhœa with nausea and vomiting has been alluded to. Hysteria is another complication. I have seen a few cases in which exceedingly intense *headache* has been observed in conjunction with dysmenorrhœa—headache so severe that the patient was lost to consciousness of everything else. A *neuralgic* habit of body constitutes a predisposition. It is generally, and as I believe correctly, supposed that the existence of the *rheumatic diathesis* predisposes to menstrual suffering. The patient afflicted with this "rheumatic" form of dysmenorrhœa is liable to migratory pains in different parts of the body, more especially in the joints; there is a loaded condition of the urine from excess of urea, lithic acid, and lithate of ammonia. Flatulence and hæmorrhoidal congestion are also usually present in such cases.

Thus, to sum up these remarks on the pathology of dysmenorrhœa:

The pain may be due to retention of menstrual fluid,

which may be either partial or complete. That is to say, there may be a slight discharge, but, the aperture of escape being insufficient, there is a partial retention; or, the patient being, for a variable time, without discharge of any kind, the case is one of complete retention.

The pain may be due to congestion of the uterus, to congestion of the ovaries, to inflammation of the Graafian follicles coincident with ovulation, or simply to neuralgia.

These two classes of cases glide insensibly one into the other. Obstruction gives rise to congestion, to inflammation, to suffering of neuralgic character; and *vice versâ*, the congestion or inflammation of the uterus leads to obstruction in the manner already pointed out; but the cause of the sufferings of the patient appears in the majority of cases to be associated with partial or complete retention of menstrual fluid.

DIAGNOSIS.

The diagnosis of pains referable to the generative organs including those of dysmenorrhœal character will be considered in the Appendix.

TREATMENT OF DYSMENORRHŒA.

In treating cases of dysmenorrhœa, the object in view is not simply to relieve the actual pain, but to prevent its occurrence. The study of the pathology of the affection shows that dysmenorrhœa is a symptom only, which in the main is observed concurrently with an impediment to the escape of the menstrual secretion from the uterus. How to remove that impediment is therefore the primary object in the treatment of such cases. Our object is to render the evacuation of the menstrual products (blood and broken-down mucous membrane) free; and experience has most abundantly shown that when this evacuation is free it is also generally quite painless.

The study of the pathology of flexions of the uterus makes us acquainted with the fact that these affections are principally, though not exclusively, the cause of the impediment to the escape of the menstrual products from the uterus. To cure the flexion is generally to remove this impediment. Hence the treatment of dysmenorrhœa means in the majority of cases the treatment of flexions.

Dysmenorrhœa when slight in degree may require little

treatment, but when severe and of long standing it is hopeless to expect good results from the ordinary palliative or so-called general treatment. Years are occasionally wasted in the vain expectation of seeing an amendment, and the prospects of a life thus blighted in consequence of a rational treatment not having been taken at an earlier period.

The mechanical treatment of dysmenorrhœa, practiced in various methods, has been largely carried out of late years. At first the narrow uterine canal was incised and the canal thus increased in size. Then it was dilated. Satisfactory results followed from both these methods of treatment. The idea on which both of these methods of treatment was based was that the stricture or narrowing was analogous to that observed in other canals, *e.g.*, the urethra; and it so happened that incision and dilatation, although based on an imperfect notion of the real circumstances of the case, proved beneficial in many instances. The defect in the procedure was that the supposed stricture was not a real stricture, but an impediment created by flexion of the canal. Incidentally the treatment accomplished, for a time at least, the work really wanting to be done, viz., the straightening of the canal. These observations apply to the majority of cases treated, though no doubt in some exceptional cases the uterine canal was really narrowed as well as bent, and they do not of course apply to cases (rare, however) of stricture of the os externum uteri. There has been much conflicting testimony as to the value and efficacy of the incision treatment for dysmenorrhœa, but the foregoing remarks will perhaps explain why incision or dilatation of the cervix uteri might do good and prove serviceable, and why also they might fail to prove permanently of use.

Another method of treatment—the use of uterine stems—has been also employed in the treatment of dysmenorrhœa, the action of the stem being to preserve a patency of the uterine canal, while it also maintains the uterus straight and prevents flexion.

So far as the relief of dysmenorrhœa is concerned it may be said of these various procedures:

The *incision* method procures rapidly and at once the necessary patency of the canal. But, unless followed up by other treatment, the incised surfaces generally unite not long afterward and the cicatricial tissue resulting may give rise to still further trouble. Moreover, the flexion (gener-

ally existing) recurs in spite of the incision, or may do so unless it receive attention. And it has to be mentioned that in some cases the incision treatment leaves behind it a most intractable form of neuralgia of the cervix. [This neuralgic state is never found where the operation is properly performed. It exists only in England, where the incision is always made with a *bistouré caché*, which, in the dark splits the cervix so widely open that there is eversion or ectropium of the endo-cervical structure.] As regards the cure of the dysmenorrhœa the result is generally good for a time, but the duration of the cure very uncertain. The incision treatment is nevertheless applicable in certain cases, particularly when there is a hard gristle-like condition of the internal os.

The *dilatation* treatment is more rational in design, but experience shows that to be efficacious it must be repeated frequently. Dilatation implies also straightening the canal, and the repetition of combined straightening and dilatation offers the very best means of permanently altering the shape and direction of the canal.

The use of *stems* for the relief of dysmenorrhœa is no doubt a rational and scientific procedure, the uterine canal being kept thereby straight and open; and the canal is more likely to grow permanently into a better shape than before. The drawbacks to this method of treatment are great, but in certain difficult cases it will find its proper place.

It is possible, however, in the early stages of the affection, to treat dysmenorrhœa mechanically without the use of instruments or internal mechanical appliances of any kind. When it becomes thoroughly understood how dysmenorrhœa generally originates, a comparatively simple treatment will be found, as I have found it to be in many cases, easily applicable, and very efficacious.

Postural Treatment of Dysmenorrhœa.—The postural treatment of dysmenorrhœa is founded on an appreciation of the connection between uterine flexion and the symptom in question. Means must be taken to prevent the descent of the fundus uteri. In cases of anteflexion the dorsal position is a proper one. In cases of retroflexion the prone position is best. In either case, however, the knee-and-chest position, maintained for four or five minutes together, several times a day, is very serviceable. The fundus is thus raised up, the flexion relieved, and the dysmenorrhœa also.

It has been long known that rest is most efficacious in relieving dysmenorrhœa. Some patients habitually go to bed during the menstrual process, finding so much relief from the position. There is nothing therefore new in the recommendation to rest at this time, but experience has shown that the positional treatment above described carries the effect still further. The treatment is particularly valuable in the case of young single women who are suffering from dysmenorrhœa not of such severe character as to render internal treatment imperatively necessary. And indeed I have in several cases employed positional treatment with great success where no examination at all had been made, but where the symptoms and general history conclusively showed that the patients were suffering from commencing uterine flexion.

Positional treatment is also very valuable as an adjunct in cases where internal mechanical apparatus are in use.

Palliative Measures.—Rest, the horizontal position, postural treatment, as above described, are all of first-rate importance. The warm hip-bath, temperature 100° or even higher, is to be recommended. Copious vaginal injections of hot water are sometimes found very serviceable. Ether, compound spirit of sulphuric ether, camphor, and henbane are ordinary and very useful remedies. Gin and water is a common domestic remedy. Poultices with laudanum sprinkled over them, hypodermic injections of morphia, turpentine stupes, are other remedies occasionally employed. Suppositories containing opium or morphia are very effective, but the use of opium is not advisable unless under strict medical orders. Chloral and bromide of potassium are good remedies. Guaiacum (Dewees), black hellebore (Meigs), have been strongly recommended. Colchicum, cannabis indica, and in fact every sedative and anti-spasmodic in the pharmacopœia, have been employed for the relief of the pain with more or less success.

[For severe dysmenorrhœa I have frequently found Hayden's viburnam compound of great service, given in teaspoonful doses every hour for three or four hours.]

During the menstrual period great care is required that the bowels be kept regular, that the digestive organs be in an easily working condition, and that food be adequate but not in too great quantity. It should be known that it is dangerous to use cold baths during menstruation.

Internal Mechanical Treatment.—A careful study of the particular case will generally indicate the line of treatment to be pursued. So far as the treatment of the flexion is concerned, that has been already discussed in previous chapters. The size, shape, thickness, and textural condition of the uterus must be duly appreciated in order that the proper plan of treatment may be selected.

Assuming that internal mechanical treatment is necessary, the following may be given as a sketch of the plan to be adopted:

In more recent cases it is a good plan to employ a vaginal pessary—the cradle for anteflexion, the Hodge pessary for retroflexion—continuously; and occasionally to employ the sound, with the double object of straightening the canal and more completely replacing the uterus.

In more chronic cases the pessary alone is of little service unless the uterus be very soft. In long-standing cases

FIG. 154.



the hardness of the uterus renders necessary frequent use of the sound to aid in the unbending. If the uterus be soft the sound is less frequently required. The steel dilator (described in vol. 1, p. 233) is exceedingly useful in the chronic cases. It may be employed twice a week. In most cases I have found that by the combined use of the vaginal pessary, the sound, or the steel dilator, chronic dysmenorrhœa can be relieved. But the treatment requires to be continued for some weeks and to be resumed at intervals of a few months in very long-standing cases. Thus, the vaginal pessary can be worn continuously, but the dilatation and sound treatment should be applied at intervals.

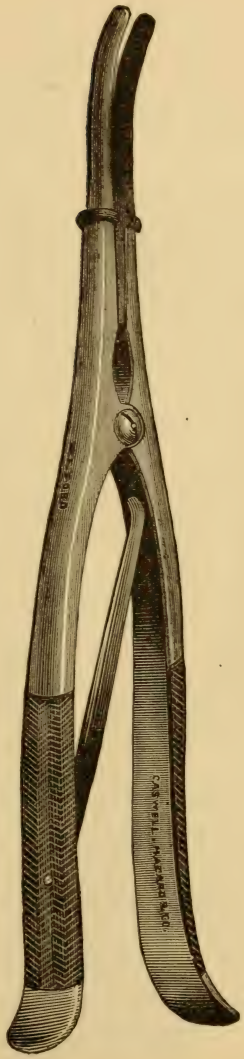
In a chronic case, where the internal os uteri is the seat of induration from the long-continued flexion compression, the question of incision arises. In some such cases slight incisions at this spot facilitate the treatment. [Slight incisions are useless. They should be done properly or not at all.]

The stem treatment is applicable to chronic cases. It is quite unnecessary for more recent cases which can be readily cured by vaginal pessaries and the occasional use of the sound. But in chronic cases, as explained in the

FIG. 155.



FIG. 156.



chapter on Flexions (see vol. 1, p. 234), the stem treatment is applicable, though for my own part I confess that I have as a rule a preference for other methods of treatment.

In the treatment of dysmenorrhœa, the treatment of the uterus as a whole must be kept in view. It is of little use to open the canal, to straighten it, and to reduce the flexion, unless means be taken to strengthen the uterus itself: this is only to be done by careful nutrition. In chronic cases, the cure is not obtained speedily even under careful treatment; for when the uterus has become hard the moulding of the organ into a better shape is a long process, and when the uterus is very soft the time occupied in making up the nutritional deficiencies is seldom less than a year or eighteen months.

FIG. 157.



[There are two methods of incising the cervix uteri for stenosis of the canal.

The first is the bilateral incision, and is Simpson's operation. The second is the antero-posterior incision, and is Marion Sims's operation.

Simpson's operation is applicable only to cases in which the intra-vaginal portion of the cervix is normally developed, in which the anterior and posterior segments of the cervix are symmetrical, with the os pointing usually toward the posterior wall of the vagina.

The Marion Sims operation is applicable only to cases of flexion of the cervix in which the intra-vaginal portion is unequally developed; in which the posterior segment is longer than the anterior.

In these cases the os tincæ does not point directly toward the posterior wall of the vagina, but, as a rule, it looks in the direction of its long axis. In all these cases there is anteflexion to a greater or less extent.

It is a great mistake to perform Simpson's operation in cases of anteflexion where the cervix is abnormally developed, and it is equally as great a mistake to perform the Marion Sims operation in cases where the cervix is symmetrically developed.

I shall first describe Simpson's operation as performed by my father and myself.

Dr. J. Marion Sims teaches that in all gynæcological

operations, the table, the Sims left-lateral semi-prone position, and the Sims speculum are absolutely indispensable.

Given all these, with the patient and speculum in position, a small tenaculum (Fig. 154) is hooked into the anterior lip near the os tincæ, and the uterus is pulled gently toward the ostium vaginæ, until the cervix uteri rests just behind the symphysis pubis, and nearly in contact with the neck of the bladder.

Holding the cervix firmly there with the tenaculum, the blade of the metrotome (Fig. 155), with the cutting edge to the left, and at an obtuse angle with the handle, is passed along the canal into the cavity of the uterus, and then, gently withdrawing it, the os is incised with a little sawing movement to the right of the patient from a quarter to a third of an inch. The blade is then turned so as to cut in the opposite direction, passed as before into the cavity of the uterus, and, by the same sort of motion withdrawing it, the opposite side of the cervix is cut to the same extent as in the first instance.

The dilator (Fig. 156) is then introduced into the cavity of the uterus till the beak passes the os internum, and the canal is gently but firmly dilated until it is large enough to admit the plug (Fig. 157) that is selected for the completion of the operation. The plug is made of glass or hard rubber or celluloid, and is to be adapted to the individual case. Where the cervix is very small the incision is of course less; where it is large it is greater.

The plug is of conical shape, from an inch and a quarter to two inches long, and varying in size from No. 1 to No. 3. There is a bulb or protuberance at the lower end, and a disk to prevent it from passing wholly into the cavity of the uterus.

This plug is introduced into the cervical canal and then pushed firmly in until the bulb is buried in the incised os. It is held in position by a sound or other pointed instrument, the vagina being extended to its greatest length by this pressure; and while it is held there the upper half of the vagina is firmly tamponed with iron cotton, which retains the plug immovably in position. The lower portion of the vagina is then packed with dry cotton.

The iron cotton is prepared in the following manner: Mix one part of the liq. ferri subsulphatis with three parts of water. The cotton is saturated with this, then squeezed

almost perfectly dry, and kept in a glass bottle nicely corked, always ready for use when required.

After the operation the patient is put to bed, and an anodyne administered or not as may be required; the recumbent position is enjoined absolutely; a bed-pan is to be used in passing water. The patient must be constipated for three or four days. After the first twenty-four hours she can eat anything she wishes, live just as if she had not submitted to operation.

She must on no account be permitted to rise in bed. The object of the iron cotton is to keep the plug from slipping. It forms a solid mass in an hour or two, and does its work well, provided the iron cotton has been thoroughly applied. When there is but little bleeding from the incisions we sometimes make the mistake of packing the vagina loosely. But it is important to always pack it as firmly with the iron cotton as if we were obliged to do it to restrain severe hæmorrhage. Loosely packed, the plug may slip and then we are sure to have bleeding. Firmly packed there is little or no danger of this. The plug may remain *in situ* two, three, or four days, occasionally five; but it is usually removed on the fourth day.

If the packing of the vagina produce pressure on the neck of the bladder a sufficient quantity of the cotton may be removed to relieve the pressure.

The tampon is to be removed with a tampon screw. The index finger is passed into the vagina, the screw is passed along the finger and screwed into a portion of cotton which is removed, then another and another, until it is all removed; and lastly the plug is taken away. After this, warm vaginal washes are used twice a day with carbolic acid or borax or any other disinfectant solution; and it is well to pass the index finger into the os every day to keep it open until the recurrence of the next menstruation. I should have mentioned that the operation should always be performed during the week following a menstrual period so that we may have ample time for the healing process to be effected before the recurrence of the next period. The patient is a prisoner from the time of the operation until the subsequent menstruation is over. She usually lies in bed for a week and after that she has the freedom of the apartment, lounging most of the time on a sofa. When menstruation is over she is allowed to return to her ordinary duties of life. Usually the patient feels little or no inconvenience

after the operation. There is never any constitutional disturbance, no fever, no rise of temperature, and if there should be any pain a single hypodermic dose of morphine will very soon relieve it, and it is seldom necessary to repeat the dose.

If by chance the patient should be taken with a chill followed by fever and high temperature, which I have seen in only two instances, then the entire dressing and also the plug should be promptly removed, leaving the case alone for subsequent operation if it should be necessary.

In the two cases in which this was necessary the operation was repeated at a later period without any constitutional disturbance whatever.

The incision of the cervix bilaterally is, as before said, Simpson's operation. But he and his followers in England have always done it with the metrotome caché. It is applicable only in cases where the intra-vaginal cervix is symmetrically formed, where the anterior and posterior segments of the cervix are equally developed, and then the incisions are to be made from internal to external os. The Marion Sims operation for stenosis of the cervix uteri is very different from this and wholly inapplicable to such cases as the foregoing. It is by antero-posterior section, and is applicable only in cases of anteflexion where the flexion is at and below the vaginal junction. In all these cases the intra-vaginal cervix is unequally developed. The posterior segment is two or three times as long as the anterior, and the os tincæ, instead of pointing down toward the posterior wall of the vagina, looks forward in the direction of the vaginal outlet. We must not make the mistake of incising the cervix backward simply because the os looks toward the vulval outlet, for it does this in retroversion where the cervix is perfectly symmetrical. But if the fundus is turned forward at the same time that the os tincæ looks forward, we can make no mistake. Then it is a case for posterior section and not for bilateral incision.

I dwell upon these distinguishing points between cases requiring bilateral incision and those needing antero-posterior section, because the mistake is often made of performing the Marion Sims operation where Simpson's should have been done. And now for the Marion Sims method.

The figure represents a case of anteflexion, the finger introduced into the anterior *cul de sac*, showing the fundus of the uterus flexed anteriorly over the outer border of the

finger, while the neck of the uterus projects anteriorly under its inner border.

The patient properly placed, the tenaculum is hooked into the anterior border of the cervix, which is pulled down, as in the former case, until the os is in contact with the urethra and rests on it. The blade of the knife at an obtuse angle, the cutting edge looking backward, is introduced along the canal until the point passes into the cavity of the uterus; then withdrawing and cutting backward with a sawing motion the posterior lip is incised back almost to the insertion of the vagina. The blade is now turned with the cutting edge anteriorly, at the same angle with the shaft, reintroduced along the canal into the cavity of the uterus, and the anterior portion of the cervix at the os internum is incised as the blade is drawn out. Then with the dilator the canal is stretched and the glass or vulcanite plug is introduced as before described, the vagina plugged with iron cotton, and the operation is finished.

Of course the subsequent treatment is precisely the same in both methods of operating.]

The treatment of *membranous dysmenorrhœa* has hitherto been generally very unsatisfactory. A careful and persevering attempt to secure continuous patency of the uterine canal by use of dilators, or tents, or the stem pessary, seems to me to offer the best chance of doing permanent good in such cases, but it may be that some internal remedy may be found efficacious; as yet nothing has appeared of much service.

I have cured two cases of membranous dysmenorrhœa in which there was profuse menstruation and stenosis of the cervix.

I dilated the cervical canal with sponge tents and then thoroughly curetted the cavity of the uterus, as in the operation for granulations, with the Sims sharp curette, and then injected the cavity of the uterus with Churchill's tincture of iodine.

While succeeding with these two, I failed utterly in three other cases.

Prof. Fordyce Barker reports cases successfully treated by the use of iodoform applied to the cavity of the uterus.]

CHAPTER XXXV.

Leucorrhœa and Non-sanguineous Discharges from the Generative Organs.

Normal Secretions of the Generative Passages.
Pathology.—Watery Discharges—Mucous and Puriform Discharges—Sanious and Offensive Discharges—Their various Physical Characters and Causes—Syphilitic and Gonorrhœal Discharges.
Etiology.—Constitutional, Local, and Specific Causes.
Treatment.—General Treatment—Removal of the Cause—Resort to Watering-places—Baths—Injections—Internal Remedies.

The Normal Secretions of the Generative Passages.—In a state of health there is poured out from the mucous membrane of the vagina, from the sebaceous and muciparous glands at the orifice of the vagina, from the vulvo-vaginal glands situated one at each side just within the orifice of the vagina, from the cervix uteri, from the whole of the mucous tract extending from the ostium vaginæ to the termination of the Fallopian tubes, a secretion sufficient to lubricate the opposed surfaces of the mucous membrane. This secretion is liable to be physiologically increased in quantity, as during congress, and under other circumstances, and it is liable also to pathological changes of abnormal character.

At the orifice of the vagina, we have *sebaceous follicles* scattered over the nymphæ, clitoris, and inner surface of the labia, the secretion of which contains butyric acid, and has a strong and somewhat ammoniacal odor (A. Farre). Around and at the sides of the vaginal aperture there are many *muciparous follicles* which secrete viscid mucus. Further, we have the vulvo-vaginal glands, which secrete a viscid fluid with a neutral reaction (Beigel),* resembling somewhat the prostatic fluid, and having a peculiar odor. The secretions of these glands at the vaginal orifice are liable to considerable increase during venereal orgasm.

The *vaginal mucous membrane* secretes a fluid, at first transparent, acid, and mixed with large quantities of epithelial *débris*. It usually appears at the outlet as a whitish or

* "Researches on the Secretions in Fluor Albus." By Dr. Beigel. *Deutsche Klin.* 1855, p. 205.

milky-looking secretion. Sir C. M. Clarke considered this appearance due to the entanglement of air, just as the saliva forms a whitish accumulation at the corners of the mouth in individuals speaking rapidly. The more decidedly *curdled* aspect of this secretion occasionally observed appears to depend on the albumen being precipitated by the acid of the secretion. In the vaginal mucus Donné found, on examination by the microscope, a number of *trichomonata*, which are oval, shaped like a pear or biscuit, and are from six lines to an inch and four lines long. Respecting these animalcules, however, Scanzoni makes the remark that their presence is connected with a certain alteration of the product of the vaginal secretion, and that they do not develop much except in a mucus incontestably of pathological nature. Beigel also failed in finding them.

The mucous secretion of the *uterine cervical cavity* is of a very different character altogether. The glands of the uterine cervix, first accurately and thoroughly described by Dr. Tyler Smith,* are exceedingly numerous, and when in a state of activity, capable of producing an enormous amount of secretion. Hence their extreme importance with reference to the etiology and nature of leucorrhœa.

The secretion of the glands of the cervix uteri is alkaline. It is, when seen issuing from the crypts of the mucous membrane, transparent, somewhat resembling the mucous secretions of the nasal passages, or white of egg, in appearance, but very tenacious and viscid; it contains many mucous corpuscles, and epithelium of the columnar variety is mixed up with it. The characters, as here described, are lost in the discharge as usually witnessed, after it has passed down the vaginal canal and become mixed with the secretions of the latter. The effect of the admixture of the secretions of the cervix and vagina is a white, soapy or creamy fluid. It now and then happens, however, that the cervical secretion escapes from the vagina in the form of masses of coagulated albumen. Ordinarily, and when the parts are in a condition of health, the secretion from the cervix is not abundant. The mucus lubricating the vaginal passages during labor comes chiefly from the cervix uteri.

The natural secretions of the *lining membrane of the body of the uterus* during the inter-menstrual periods, are, in a

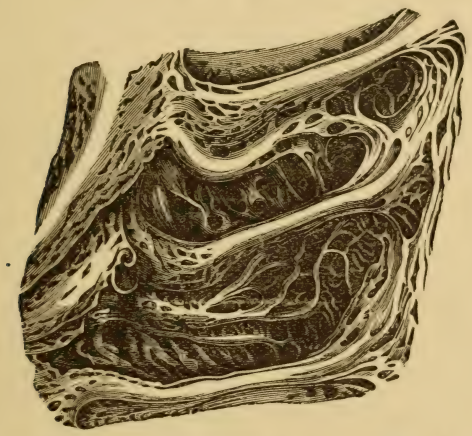
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*"On the Pathology and Treatment of Leucorrhœa." London: Churchill. 1855.

state of health, and when the uterine functions are carried on properly, very small in amount, and colorless. But when the cavity of the uterus is increased in size, the area of secreting surface is necessarily much extended, and important results follow, as will be hereafter explained when we come to consider the causes of leucorrhœa.

Lastly, respecting these secretions in a state of health, it must be stated that usually they are only sufficient in quantity to lubricate the parts; but there are not a few instances in which the secretions are much more profuse, and yet

FIG. 158.*



without entitling the case to be considered altogether pathological. In some cases, the increase in quantity is purely physiological.

PATHOLOGY.

The more prominent physical characteristics of the various discharges to which we have now to direct attention have been made the basis of a rough sort of classification. Thus, there are *watery* discharges, *mucous* discharges, *muco-puriform*, and *purulent* discharges. Then, we have discharges which occasionally assume a *sanious* character, in which there is an evident admixture of blood elements.

* Fig. 158 shows interior of cervix magnified. (Tyler Smith.)

Offensive discharges also form a class, the differential diagnosis of which may be usefully pointed out.

It will be convenient to discuss these *seriatim.*

WATERY DISCHARGES.

Pregnant women are sometimes the subjects of a discharge of a watery nature, the origin of which is open to some doubt. The fluid may escape gradually, and the flow may be persistent for a longer or shorter time; or the quantity may be greater, but the duration less. In some cases the discharge comes certainly from the amnion.

There is another class of cases in which a watery discharge occurs from time to time, *i.e.*, where the uterus is occupied by the *hydatidiform* or *vesicular mole*—"hydatid pregnancy," as it was formerly called. Patients believed to be pregnant increase too rapidly in size, fœtal movements are not felt, the mammary symptoms are in abeyance, the whole aspect of the case being irregular, so to speak, and yet there are strong reasons for believing the woman to be pregnant. After a time, slight losses of blood may occur, and slight but repeated discharges of watery fluid, generally accompanied by labor-like pains; or discharge of watery fluid alone is observed. The cause of the discharge is rupture of the cyst-like vesicles composing the chief part of the degenerated contents of the uterus; partly perhaps also to expulsion from time to time of amnionic fluid. Respecting the appearances presented by the hydatidiform bodies themselves, which may be expelled together with the watery fluid, see p. 64, vol. ii.

Another cause of watery serous discharges from the vagina is found in the peculiar growth first described by Dr. Clarke under the name *cauliflower excrescence*, but which is now known as epithelial cancer or epithelioma. The fluid discharged in such cases is described in the work of Sir C. M. Clarke as "little more than a clear watery fluid; blood, however, is sometimes mixed with it, or perhaps comes away alone in large quantities.' * The quantity of fluid discharged is sometimes enormous. Dr. Ramsbotham records a case in which twenty dozen napkins were used in a week. Safford Lee describes the discharge as brownish, like colored saliva, and this description is very accurate.

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*Vol. i., p. 34.

Uterine polypus is occasionally the cause of a very profuse watery discharge. This fact has not been sufficiently dwelt upon. I have observed this symptom in a marked degree in several instances.* Here discharges of a watery nature are observed alternately with sanguineous discharges, besides profuse menstruation, and other signs of polypus. The more usual form of discharge attendant on uterine polypi is not, however, that now under consideration. Such watery discharges are occasionally the sole symptom in cases of polypus of the uterus.

An abundant serous, or sometimes offensive, discharge may be due to a *fungous eancerous growth* within the uterine cavity. This is a form of disease of great rarity.†

Tubercle of the Uterus.—In this rare disease a continuous profuse watery discharge, of a dirty yellow or pale brown color, extending over a considerable period, may be noticed.

Sometimes an *ovarian cyst* becomes adherent to one of the Fallopian tubes, or, at all events, in some way becomes connected with it; the contents of the ovarian cyst pass into the Fallopian tube, thence into the uterus, and flow away gradually from the vagina. The signs present in such a case would be: previous existence of a tumor situated in the hypogastrium, or more or less to one side, subsidence of the same, an occurrence of simultaneous watery or serous discharge from the vagina. This mode of termination of an ovarian cyst is rare; Dr. West only noticed it in one out of sixty-eight cases. I have observed the fact in two instances.

Watery Discharge following Parturition.—In Dr. Ashwell's work‡ will be found related particulars of five cases in which a profuse watery discharge, coming away in gushes, was noticed some days after labor. In only one of the cases was opportunity afforded of ascertaining *post mortem* the condition of the uterus: in that case, "three elevated masses, having a fungoid and melanotic appearance," were found growing inward from the uterine wall. Such cases are rare.

Sir C. M. Clarke refers to another cause of watery discharges from the vagina, the "*oozing excrescence of the labia*,"

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* See cases by Dr. Elkington, illustrative of this fact, in "Obst. Trans.," vol. i.

† See Sir J. Y. Simpson, *Med. Times and Gaz.*, Jan. 15, 1859.

‡ "On Diseases of Women," p. 507.

probably identical with what would be now termed chronic eczematous affection of the skin covering the parts in question, associated with a chronic inflammatory condition of the tissues beneath.

Lastly, it is just within the limits of possibility that the watery discharge may be really an *involuntary escape of urine* from the bladder, either caused by paralysis of the muscles surrounding the urethra, or due to vesico-vaginal fistula. [Urine is sometimes discharged involuntarily in laughing, sneezing, coughing, lifting, or other physical exertion. A napkin worn for a few hours makes the diagnosis clear by its urinous odor.]

MUCOUS AND PURIFORM DISCHARGES.

The cases in which discharges having this character are observed form that large class to which the term "leucorrhœa" is more usually applied. In this group the discharges are more or less completely continuous and are more or less opaque. The color varies exceedingly; it may be whitish, decidedly yellow, yellowish-green, or of any intermediate shade. The consistence of the discharge also varies; it may be viscid, gelatinous, of the consistence of cream, or quite fluid.

Most cases of "leucorrhœa" are of a composite nature; that is to say, the discharge observed at the vaginal orifice proceeds from more than one source, and results from the mixing of secretions from the cervical mucous membrane, from the mucous membrane lining the vagina, and, in certain cases, also from the interior of the body of the uterus itself.

In most cases, there is a preponderance of secretion from one or other of the sources indicated. The difference in the source of the discharge has been made the basis of a division of cases of leucorrhœa into "uterine" and "vaginal;" the former including cases in which the discharge proceeds chiefly from the uterus (the cavity of the cervix), and the latter including those in which the discharge has a vaginal origin.

If the discharge consist of a curdy-looking fluid, of acid reaction, and containing in suspension tessellated epithelium *débris* in quantity, it generally proceeds from the mucous membrane of the vagina.

If the discharge consist of a soapy-looking matter, or of

vitreous lumps of coagulated mucus, or of viscid tenacious mucus, its origin is the cervix uteri. It is only in cases where the cervical glands are in a very active condition that products of this kind are seen externally in any considerable quantity.

If the discharge be of a creamy character, tolerably profuse, and constant, it proceeds from the cervix uteri, or, as I have found in a considerable number of instances, from the cavity of the body of the uterus. But the secretion of the cervix alone is, or may be, rendered puriform by admixture with the vaginal secretions.

It is thus evident that, from the physical characters of the discharge alone, we cannot obtain in all cases positive information as to the precise spot from which it is poured out. Where circumstances render it necessary that more exact information be obtained an examination must be resorted to.

PURULENT DISCHARGES.

a. When the purulent discharge is *continuous* the origin of the discharge is probably the vaginal mucous membrane, the uterine cervical glands, the surface of a cancerous or other ulcer, suppuration of retained membranes or placenta after abortion, etc. An important class of cases, in which there is continuous discharge, is that in which the purulent discharge is the result of *gonorrhœal* infection.

b. Non-continuous Purulent Discharge.—In the other class of cases—in which there is a purulent discharge only lasting for a time, ceasing, and then recurring—the source of the discharge is either the uterine cavity itself, or an abscess situated near the vagina, and opening into that canal. Purulent discharges, whether continuous or non-continuous, far more often than has been supposed, proceed from the cavity of the body of the uterus; and we have positive evidence of this origin in cases where, either from contraction of the uterine canal at the junction of the body and cervix (produced by senile atrophy, flexion of the uterus, etc.), an accumulation takes place within the body of the uterus, and in which the symptom we are now considering—occasional and abrupt discharge of purulent fluid from the generative passages—is observed. Sir C. M. Clarke and Dr. Ashwell both allude to a form of purulent discharge produced, as they describe, by formation and retention of pus

in the uterine cavity, the pus so formed escaping from time to time in the manner just described. In a case of Dr. Ashwell's the purulent fluid expelled amounted to nearly half a pint on two or three occasions. I have observed many precisely similar cases, though the quantity so expelled has not been so great as this. Profuse discharge of pus from suppuration of a polypus of the uterus has been noticed (Safford Lee). Dr. Matthews Duncan* has called attention to such an occurrence, particularly in the case of old women who have ceased to menstruate. In a woman who is still menstruating, the symptoms are dysmenorrhœa, a peculiar feeling of tightness round the loins, sickness or vomiting, etc.; these symptoms finding sudden relief in the discharge of a certain quantity of purulent fluid. If menstruation have ceased, the symptoms slightly vary. Flexions of the uterus in women who have borne children are very frequently attended with accumulation and periodic expulsion of a purulent fluid from the uterine cavity. I lay the more stress upon this fact, as it is one which has not yet seized hold on professional appreciation, and probably Dr. Ashwell's cases were of this kind.

One of the most important causes of this occasional purulent discharge is *pelvic abscess.* The abscess may follow after, or be the result of, parturition; in which case other signs would lead to a suspicion of its origin. Another highly interesting class of cases is that in which an abscess, the result of suppuration of the contents of the cyst of a peri-uterine hæmatocele, discharges its contents into the vagina. In both classes of cases, however, the discharge appears suddenly, and they markedly differ in this respect from ordinary cases of purulent leucorrhœa.

SANIOUS DISCHARGES.

These evidently contain a certain admixture of blood-elements. In women the subjects of profuse menstruation, as the discharge of blood is becoming less, there is generally observed a period when there is a sanious discharge. Where an hypertrophied (so-called ulcerated) condition of the villi lining the cervix is present, slight bleeding readily occurs. Sanious discharges are not unfrequently found to be due to morbid growths within, or organic disease of, the

* *Edinburgh Medical Journal*, March, 1860.

uterus; fungoid condition of the uterine mucous lining, malignant ulceration of the os uteri, etc.; and we find, combined, leucorrhœa and very slight but continuous hæmorrhage. In polypus of the uterus, such sanious discharge, alternating with hæmorrhages or with colorless leucorrhœal discharge, is observed. Whatever, in fact, is capable of giving rise to hæmorrhage may occasion discharge of a sanious character. In cases of pelvic hæmatocele, where an opening has formed between it and the vagina, and the contents are in process of evacuation, there will be a sanious discharge. The presence of a more or less continuous sanious discharge is a condition of things requiring a careful digital examination.

OFFENSIVE DISCHARGES.

This quality of the discharge is important in reference to the determination of disease in certain cases. Discharges of an offensive character have been usually considered as absolutely indicative of the existence of *cancer*. It is true that, in almost all cases of cancer of the uterus there is to be remarked a particularly offensive odor of the discharge proceeding from the vagina; but it is also true that it may be absent. The smell of cancerous discharge has a peculiar fœtor: so peculiar that it can hardly be mistaken for anything else, according to some authorities. It is certain, however, that the peculiarity is not equally appreciable by different observers; the absence of a peculiarly fœtid odor, or indeed the absence of fœtor of any kind, does not shut out the possibility of the presence of cancer. [Fœtor is evidence of sloughing. Cancerous discharges are never fœtid till destruction of tissue begins.] *Sarcoma of the uterus* gives rise to a very peculiarly offensive discharge. This fact cannot be too much insisted on, for there are records of cases in which disastrous results have followed the belief on the part of the practitioner that cancer of the uterus was necessarily associated with presence of a fœtid discharge. The later the stage of the cancerous discharge the more constant is the fœtor, the ulcerative process appearing to be generally associated with it. It must not be forgotten that there may be fœtor in any of the diseases of the uterine organs in which hæmorrhage is present, if cleanliness be not observed; clots of blood retained and decomposing are especially liable to give rise to it. And it sometimes occurs in cases where pessaries are employed.

Another cause of offensive discharge from the vagina is the *presence of a dead ovum or portions of the fœtal membranes, etc., in the uterus.* It is more generally connected with retention of the whole or portions of the *placenta.* The previous existence of pregnancy and the occurrence of delivery would point out the nature of the case. In some few cases which have fallen under my own observation, the presence of a fœtid discharge was connected with retroversion of the gravid uterus occasioning such retention, and I have observed the same circumstance in conjunction with retention of portions of the ovum with anteflexion. Offensive discharges in women *during the puerperal state* are so obviously connected therewith, that the relation of the two things as cause and effect could hardly escape recognition.

Apart from the existence of pregnancy, *flexions* of the uterus causing retention of fluid within it may give rise to offensive discharge. It sometimes happens that the discharges from the vagina are offensive without any obvious cause. Thus cases are observed in which the discharge at the menstrual period is offensive, and preceded or followed by leucorrhœa having the same character. In such cases flexion of the uterus will generally prove to be the cause. I have seen cases of this kind in quite young women.

It is possible that the hymen may, by preventing free escape of fluid from the vagina, be the cause of an offensive discharge.

Want of cleanliness is occasionally the cause of an unpleasant odor of the discharges from the generative organs. When the sebaceous follicles situated at the entrance of the vagina secrete copiously, this phenomenon may be observed.

Among the physical qualities of discharges from the vagina, *their effects on the surface of the body with which they come into contact* have to be considered. Some discharges from the vagina are quite devoid of irritating properties; but the reverse is often observed. Irritating effects, such as redness, excoriation, attended with smarting pain of the skin of the inner side of the thighs and the external genitals, are common in connection with excessive vaginal secretion, however produced; constant contact with the vaginal secretion, often in a state of hyper-acidity, produces this result. Occasionally excoriations are produced by irritating discharge from the ulcerating surface of a cancerous disease of the cervix uteri. Again, *syphilitic* sores may

spread and produce others in the immediate neighborhood.

GONORRHŒAL AND SYPHILITIC DISCHARGES.

The interest attaching to the subject renders it necessary to devote a short time to the consideration of *syphilitic* and *gonorrhœal leucorrhœa*, and to mention some facts useful in the elucidation of cases suspected to be of this nature.

The subject is a difficult one, the pathology of these affections being still in a very unsettled condition, and observers being by no means agreed as to what is to be called gonorrhœa, and what syphilis. Thus Dr. Whitehead considered the uterus, in cases of gonorrhœa, more affected than the vagina; by others the vagina is considered to be the proper seat of the affection. Dr. Tyler Smith believed that many of the cases set down by Dr. Whitehead as cases of gonorrhœal leucorrhœa were cases in which the leucorrhœa was of syphilitic origin.

There appears unquestionably to be a *syphilitic leucorrhœa;* but the difficulty is to distinguish it from the more simple form.

The diagnosis of supposed *gonorrhœa* has always been found very difficult to diagnose in the female subject, for the reason that the discharge arising from gonorrhœa and that of ordinary leucorrhœa are very much alike. Gonorrhœa in the female is, in its worst form, an intense vaginitis, the discharge being made up of epithelial plasma and purulent matter; more frequently it is a vulvitis, the inflammatory action being limited to the mucous surfaces at the vulva. The meatus urinarius very frequently participates in the discharge and irritation in cases of gonorrhœa. The collateral facts relating to the coming on of the attack are characteristic: the attack begins somewhat suddenly; there are heat, pain, and burning along the course of the urethra, all intensified and increased during micturition; there is usually also a purulent discharge from the urethra. Sometimes blood follows the evacuation of the bladder. When the gonorrhœal discharge becomes chronic, the urinary irritation becomes so much lessened in degree as not to attract attention unless inquired after. If a discharge from the urethra can be made out, it will very materially assist the diagnosis. Sir C. M. Clarke thought the diagnosis of gonorrhœa impossible; and it must be confessed that this is very often found to be

the case. A discharge in one sex producing a discharge in the other does not prove that the infecting individual is the subject of gonorrhœa; for it is a well-authenticated fact that an apparently simple discharge in the male may give rise to a discharge in the female, and *vice versâ*. Cases in which these points rise up for determination require the exercise of great caution and careful investigation before giving an opinion. A case of simple balanitis in the male, contracted by intercourse, may, it is said, be distinguished from a case of gonorrhœa by the fact that the symptoms of the former affection come on a few hours only after intercourse, whereas in gonorrhœa there is a period of incubation of from four to fourteen days, attended with chordee.*

It is impossible for the practitioner to exercise too great caution in pronouncing an opinion for or against the specific nature of a discharge from the female generative organs. In the words of the late Dr. Ashwell, "it is always his duty to cure the disease, but rarely to venture upon an exposition of its nature. If he can positively affirm that it is of simple origin, let him do so, if suspicion has been aroused; if not, it is better to avoid any distinct allusion to the matter." †

ETIOLOGY.

From what has been already stated in reference to the varieties of physical characters observed in the non-sanguineous discharges from the generative organs, it will be gathered that the *causes* of these discharges are many.

They resolve themselves into two, *constitutional* and *local* causes.

Constitutional or General Causes.—The first of these is *climate*. In warm countries, leucorrhœa is more common than elsewhere, and coexists with a great tendency to menorrhagia, which indeed, in common with leucorrhœa, arises in great measure from deficient tonicity of the uterine vessels, frequently the forerunner of serious uterine disease. Moist and damp situations appear to have a similar effect: thus the inhabitants of Holland, Belgium, and the fenny districts of England are said to be peculiarly liable to leucorrhœa.

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* See case by Mr. Nunn, quoted by Dr. Tyler Smith in his work "On Leucorrhœa," p. 129.

† "Diseases of Women," p. 175.

A state of *plethora* is capable of giving rise to leucorrhœa. Women who live too well and take but little exercise suffer in this way. When the opposite state of things is present, and the system is reduced by losses of blood or defective nutrition by "chronic starvation," in fact, to a condition of *anæmia*, leucorrhœa may be one of the results observed. Whether in the case of a plethoric or an anæmic patient, leucorrhœa may occur irrespectively of child-bearing. It frequently happens, however, that the influence of *child-bearing* is very considerable in causing leucorrhœa, particularly in anæmic individuals. The effect of child-bearing is twofold. Women in an anæmic, half-starved condition, whose blood is thin and watery, frequently suffer to a very troublesome extent from leucorrhœa during the period of pregnancy; after pregnancy has ended, the increased action of the various glands connected with the generative organs continues, the effect of which may be persistence of the leucorrhœa.

In individuals of *phthisical tendency*, leucorrhœa is more apt to arise in connection with child-bearing, and in such persons, indeed, very frequently independently of it. In some cases, *over-lactation*, by inducing a state of extreme debility, appears to produce leucorrhœa, often in an extreme degree of profuseness.

The relations of *menstrual disorder* and leucorrhœa as cause and effect require a word or two. Leucorrhœa is often present in individuals in whom menstruation is absent; and Dr. Tyler Smith* considered the leucorrhœa as vicarious of the menstrual secretion in such cases. It is questionable how far this view of the case is correct. It appears more rational to suppose that both the leucorrhœa and the menstrual deficiency are due to derangement of some one or other of the vital processes. Thus the individual is rendered weak by over-lactation or some other debilitating agency; the menstrual secretion becomes less and less healthy, and less sanguineous in character; she becomes affected with leucorrhœa; the leucorrhœa is then naturally more profuse at the menstrual period, when the generative organs are in a state of engorgement, than at other times.

Chronic diseases of the lungs, especially *emphysema* and *valvular affections of the heart*, are often observed in associa-

* "On Leucorrhœa."

tion with chronic leucorrhœa, which is, under such circumstances, difficult to cure.

There are some general observations which apply to all these cases in which leucorrhœal discharge arises from a constitutional or general cause—that, as a rule, symptoms which are usually associated more particularly with actual pathological changes in the uterus, such as pain, tenderness, etc., are, at all events at first, absent. Further, the quantity of the discharge is not very considerable, unless there be some local reason for it; and lastly, the discharge itself, when produced by purely constitutional causes, is less liable to become offensive or sanious than in cases where there is some actual lesion of the generative organs.

When leucorrhœa is associated with any general defective condition of the bodily health, it may be taken for granted that, if the leucorrhœa be not absolutely dependent thereon (a relation which is found to subsist in many cases), it is at all events aggravated and rendered persistent thereby.

Local Causes.—By far the most common local cause of leucorrhœa is *flexion of the uterus.* Flexion of the uterus gives rise to leucorrhœa either by obstructing the free outlet of secretions from the uterine cavity or by keeping up a continuous congestion of the whole organ. The drainage of the uterine cavity is deficient, the shape of the uterus is mechanically unfavorable to easy escape of fluid from its interior, and the internal os is partly closed by the compression there produced by the uterine flexion. Hence accumulation of leucorrhœal fluid, sanious just at the end of menstruation, puriform later on, coming away in gushes at intervals in many cases. The fluid so retained *in utero* irritates it, excites more secretion, and we have now a condition spoken of as "endometritis." The interior of the uterus is never quite empty, and is sometimes much distended with the retained secretion.

In other cases the chronic flexion, by keeping up a continuous congestion of the cervix uteri, gives rise to excessive secretion from the os and cervix. Still more is this liable to occur if the os be widely open or everted, and the delicate everted surface of the interior of the cervix subjected to friction and pressure against the floor of the vagina.

It may be stated as a general rule that chronic and obstinate cases of leucorrhœa will be almost invariably found on

investigation to be due to uterine flexion. In some few cases this troublesome leucorrhœa is almost the only symptom; in the majority of cases other marked symptoms of uterine flexion will be found.

Endometritis is very commonly due, as above explained, to defective drainage of the uterus. But in some cases there occurs in connection therewith excessive growth or, more properly speaking, excessive congestion of the uterine mucous lining, so-called "fungosities." Under these circumstances the secretion from the uterine interior is very profuse, and the leucorrhœal discharge proportionately great in quantity.

Lacerations of the cervix uteri are undoubtedly a cause of leucorrhœa. The irritation and inflammation of the everted surfaces of the interior of the cervix occasion both loss of blood and discharge of a leucorrhœal character.

Hypertrophy of the cervix uteri or of the *body of the uterus*, fibroid growths in the uterus, either in the form of *fibroid tumors*, *fibroid polypi*, or *mucous polypi*, these are almost always accompanied with leucorrhœa, sometimes with very abundant watery or non-sanguineous discharge. *Inversion of the uterus*, *cancer of the uterus* in its various forms, give rise to characteristic non-sanguineous discharges often very profuse in quantity. *Prolapsus of the uterus* or *of the bladder*, *growths in the vagina*, are other causes. *Excessive sexual intercourse*, masturbation, the latter generally accompanied by a very relaxed condition of the vaginal aperture, are causes of leucorrhœa.

Ascarides in the rectum are not uncommonly the cause of leucorrhœa, not only in children, but in adults. In such cases the ascarides appear to travel from the rectum to the vagina. *Hæmorrhoids*, *vascular tumor of the meatus urinarius*, may also produce leucorrhœa.

The *specific* causes of leucorrhœa are *gonorrhœa* and *syphilis*. In these cases the affection is more generally limited to the *vulva*, but the inflammatory actions may extend higher up, even as far as the uterus itself, and in a few cases probably as far as the ovaries (*gonorrhœal ovaritis*). The diagnosis of the specific causes of leucorrhœa has been already alluded to (p. 113, vol. ii.).

TREATMENT OF LEUCORRHŒA.

The treatment of leucorrhœa (excluding from the consideration, discharges of a specific nature) is of two kinds,

general and local. In most cases, a combination of the two is the more suitable, and yields most satisfactory results. Even when there is a tangible alteration of the uterus, giving rise to leucorrhœa, general treatment is often of very great service; although, in order to cure the disease giving rise to the discharge, local measures may be indispensable.

To remove the *cause* of the leucorrhœa is the first indication. The treatment must have regard primarily to that. The cause must if possible be removed. There are few cases of leucorrhœa in which the uterus is altogether sound. The organ is usually congested, large, its tissues relaxed, and the activity of the glandular apparatus lining the cervix unnaturally increased; under such circumstances the primary object is to remove the condition of the uterus on which the leucorrhœa depends (see Treatment of Chronic Congestion of the Uterus; also chapter on Abnormal Conditions of the Lining of the Uterus). The next element in the treatment is of the utmost importance; in all cases it is absolutely essential to supervise the due action of the digestive organs, and of the great cutaneous surface. Plans of treatment, in other particulars the most judiciously contrived, may prove useless unless these primary points be attended to. The quantity, quality, and mode of taking food must be carefully adjusted to the requirements of the case. The skin must be kept warm, and its due action insured by employment of friction, baths, and exercise. In patients who have been long the subjects of leucorrhœal discharge, the importance of carefully regulating the "mode of life" cannot be over-estimated; and it is the more necessary to insist on this, as not unfrequently the practitioner on the one hand, and the patient on the other, pay far too little attention to these essentials; the result of this neglect being a temporary, and not a radical, cure of the affection.

Resort to Watering-places.—Several watering-places have obtained repute from the efficacy of mineral waters in removing leucorrhœa, especially that of a chronic form. It is unquestionable that very good effects are frequently obtained from the use of the waters in question; the effect produced results in many cases from change of air, the perfect rest and relief from ordinary cares and anxieties, the regular exercise, simple diet, and change in the mode of life generally, all of which play, unquestionably, a most important part in bringing about the cure. The improve-

ment in the general health which follows an improvement in the general nutritional activity, is usually rapidly followed by a cessation or diminution of the leucorrhœa. In a certain number of cases we find great difficulty in persuading patients to follow up systematically the course of treatment enjoined while they are living in their own houses, surrounded by home associations, and in a manner tied down to home habits; and for this reason it is sometimes necessary to send patients to watering-places in order that they may be induced to give themselves a fair chance of recovery. In the choice of a watering-place, regard must be had to the special condition and requirements of the patient. Recent flexions of the uterus, the organ being still in a soft condition, may be much improved indeed, and the leucorrhœa sometimes cured, by a course of baths; but when due to a chronic flexion only temporary benefit will be derived, unless other means of cure are also adopted.

Baths.—These are very powerful therapeutic agents in the treatment of leucorrhœa dependent on constitutional causes. The use of the bath has the effect of determining the blood to the skin, and of relieving the congestion of the internal organs. The condition of the patient must regulate the form of bath. The most simple is the "sponge-bath," the patient being directed to sponge the whole body night and morning with warm or tepid water; the skin being rubbed dry by means of a coarse towel, and the friction continued for some minutes. In women who are not strong the employment of cold baths is not to be recommended. Then comes the hip-bath, which may be either of pure, salt, or medicated warm water. The simple hip-bath is, however, very serviceable. After the bath, the skin should be rubbed as in the case of the sponge-bath. With due care, the hip-bath or sponge-bath, alone or together, may be used in all cases, however debilitated the patient may be. It is necessary that a "reaction," as it is termed, take place after the bath, or it does harm, and the patient suffers from headache or other inconvenience for some hours after. There are some cases which are most benefitted by the warm bath, in which the patient is wholly immersed. Thus, in cases of leucorrhœa which, from the severity of the symptoms and suddenness of their invasion, may be termed *acute*, the warm bath is of the greatest utility.

Injections.—Judiciously used, injections are of the greatest value in the treatment of leucorrhœa. In many cases they

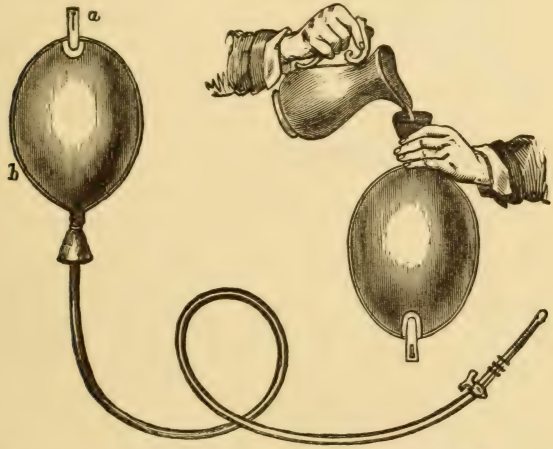
have a curative effect; in all cases they are of some service; and in certain cases they are almost indispensable. But it is not less true that leucorrhœa may be often cured without recourse to injections at all.

The first point to be attended to in the employment of injections is the form of instrument to be used. It is in most cases mere trifling to employ a small syringe. What is necessary is an apparatus by means of which a considerable quantity of fluid may be thrown up and obtain access to the cervix uteri. A large-sized gum-elastic vaginal pipe, rather longer than the speculum, open above by five or six tolerably large perforations, should be first introduced into the vagina so as to reach the os uteri. Having been introduced, the lower end of the pipe is then to be connected with the pipe of the injection apparatus. This is made in a variety of forms. Higginson's or Kennedy's apparatus is convenient for the purpose. I have, however, found it exceedingly difficult to induce patients, especially those who are weakly and debilitated, to use any instrument requiring manual force, however slight, for a sufficient length of time to do good; moreover, the quantity of fluid capable of being used at each operation is too restricted. A somewhat continuous irrigation of the cervix uteri is necessary, and this is not to be had by the ordinary apparatus—unless, indeed, by taking unusual pains or trouble in the matter. In order to supply the defect in question, I have had constructed a very simple and effective instrument, by which the patient can have the benefit of irrigation of the vaginal part of the uterus of some minutes' duration, and without the necessity for manual effort, such as pumping, of any kind. An india-rubber bag or reservoir, capable of holding nearly a gallon of water, has attached to it a long flexible pipe, which ends in the vaginal exit tube. The bag filled with water is hung up above the patient, or placed on an article of furniture a little above the patient's body. The water descends by the action of gravitation alone; the rapidity of the flow is regulated by simply turning a stop-cock, placed just outside the vaginal tube, and the water flows until the reservoir is empty. The douche apparatus in question has the advantage of great portability and simplicity. The douche should, it is hardly necessary to observe, be used with caution in cases where pregnancy is suspected.

The next question is as to the nature of the fluid to be

injected. Very much benefit will be derived from the use of water, if only a sufficient quantity be used at each injection. And for a variety of reasons, not the least of which is that it is always accessible, and no preparation or forethought is required, it is advantageous to use water alone. In the former editions of this work I have recommended the use of cold water in ordinary cases, but a more extended experience has led me to the conclusion that in some cases injurious effects are liable to result from the use of quite cold water, and, unless in exceptional cases, I believe warm water at about 85° or 90° is to be preferred (see also chapter on Congestion of the Uterus).

FIG. 159.*



A variety of substances are used mixed with water, and constituting *medicated* injections. Most of these are considered beneficial from the astringent properties they possess. Alum, sulphate of zinc, nitrate of silver, decoction of oak bark, or tannin, are those most ordinarily used. A combination of tannin and alum (one or two drachms of tannin with four drachms of alum to two pints of water), recommended by more than one eminent authority, I have found very convenient. In all cases where medicated injections are used, it is desirable to employ, first, a simple injection

* The "uterine douche," constructed as described above, is to be procured of Messrs. Savory & Moore, New Bond Street.

of water, and to throw up the medicated liquid last. It is frequently found necessary, in obstinate cases, to change the injection from time to time. A particular remedy loses its effect after a few days' use.

Medicated Pessaries.—These are prepared with cacao butter, have the shape of a rifle bullet, and contain various astringent or caustic substances in suitable quantities. When cold, they are firm and easily adjusted in position at the os uteri. The warmth of the body soon liquefies the pessary, and leaves its active constituents free.

Blisters to the lumbar or sacral region are sometimes employed in obstinate cases of leucorrhœa.

Injections of a medicated nature are now and then necessary to obviate the offensiveness of the discharge which may be present, as in cases of cancer, cauliflower excrescence of the os uteri, etc. In such cases, antiseptic agents, *e.g.*, diluted tincture of iodine, tincture of iron, perchloride of iron suspended in glycerine, chloralum, etc., and applied by means of cotton-wool, or lint, are exceedingly useful.

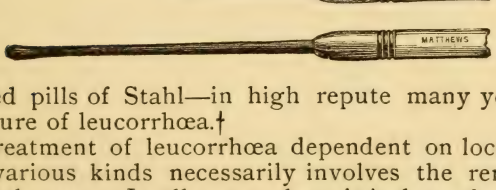
In cases where the discharge is acrid, and gives rise externally to irritation, it is necessary to order frequent ablutions with tepid water. A lotion containing a little carbonate or biborate of soda in solution is occasionally found serviceable in such cases.

Internal Remedies.—The object with which we give internal remedies in leucorrhœa is usually that of remedying the constitutional derangement, whatever that may be. Purgatives may be necessary to produce regular action of the bowels, especially at first—and of these it is better to give small doses frequently than large doses at longer intervals. Where the patient is chlorotic, aloes may be given; but in other cases it is to be avoided. The debility with which, in most cases, leucorrhœa is associated, necessitates the employment of tonic remedies, of which the best is unquestionably iron: less probably depends on the particular form of the drug than on the fitness of the case for iron in any shape. Cubebs, copaiba, etc., have been recommended in leucorrhœa, as having special effects in diminishing secretions from mucous surfaces. The ergot of rye has a better claim to our notice. I have used it in cases where the uterus was in a lax, congested condition, with the double effect of relieving profuse menstruation and leucorrhœa sometimes associated. As a rule we cannot expect much specific effect from internal remedies in cases of leucorrhœa.

Stimulants are frequently necessary in the treatment of chronic cases of leucorrhœa attended with debility and prostration; they are to be looked upon in some instances quite as essential as good food. The stimulant selected should be one which is found to suit the patient. The administration of stimulants is to be avoided when the patient is plethoric, and when the viscera, pelvic and abdominal, are loaded with blood.

Schönbein and Aran have recommended lavements containing aloes suspended in mucilage or soap and water, in the treatment of chronic leucorrhœa. The lavements are to be used every day, or every other day, the rectum having been first washed out by water alone. The remedy in question must be used with caution. It may here be remarked that aloes formed one of the principal ingredients in the

FIG. 160.*



celebrated pills of Stahl—in high repute many years ago for the cure of leucorrhœa.†

The treatment of leucorrhœa dependent on local disorders of various kinds necessarily involves the removal of the special cause. In all cases where it is dependent on deficient drainage of the uterine cavity, the principal object in view will be to facilitate the escape of the fluid from the uterus (see Treatment of Flexions). Cases of this kind which have been hitherto known under the term "endometritis" have been frequently treated by internal applications to the interior of the uterine cavity. Dr. Playfair, who has devoted much attention to the subject, recommends the application of various caustic or semi-caustic substances to the uterine interior by means of a probe of peculiar construction round which is wrapped cotton-wool charged with the selected application. First the interior of the uterus is

* Fig. 160 represents Playfair's probe, which is of flexible metal. The probe can be fixed to a boxwood handle sufficiently long to be used through the speculum.

† See Dr. D. D. Davis's work, vol. i., p. 367.

wiped out by means of cotton-wool wrapped round the probe, and the liquid used is then introduced in the same way. The application Dr. Playfair prefers is either tincture of iodine or equal parts of crystallized carbolic acid and glycerine.*

CHAPTER XXXVI.

Nervous Disorders Referable to the Uterus—Hystero-neuroses—General Considerations.

Peculiarities of the Nervous Relations of the Uterus—Reflex Excitability of the Uterus—General View of the so-called Hysterical Diseases—Question as to the "Central" and "Peripheric" Origin discussed—Arguments for Uterine Origin—The principal Hystero-neuroses enumerated: Naûsea and Vomiting; Hysteria and Hystero-epilepsy; Reflex Mental Disturbances; Cephalalgia.

The uterus has peculiar relations to the nervous system. It has comparatively little nervous susceptibility of one kind, but is largely endowed with nervous excitability of another kind. The healthy uterus is very little sensitive to the touch, and almost every accessible part of it may be touched without giving rise to sensation *when the organ is not diseased.* But the uterus is a most sensitive organ in regard to its reflex excitability. The disorders which are produced in consequence of this reflex excitability constitute a very interesting class of affections, and they have at all times attracted much attention. In early times the word "hysteria," employed to designate them, conveyed also a notion as to their source, which many modern writers appear, as I consider most erroneously, to set aside altogether.

In hysterical disorders we have present for consideration two elements:

1. The Condition of the Nervous Centres.
   - *a.* Simply unduly impressionable.
     - A. Emotionally.
     - B. Impressionable in an undue degree to reflex disturbing influences.
   - *c.* Actually diseased.

* Meeting of British Medical Association, Cork. *Brit. Med. Journ.*, March, 1880.

2. Particular Peripheric (Reflex-exciting) Irritation.

a. In the uterus.
b. In the ovary.
c. Elsewhere.

The phenomena of hysteria, using the term in its most general sense, affect more or less the whole machinery of the body, the muscles of the limbs and body, the involuntary muscles, as of the stomach and other organs, as well as other general disturbances in the sensitiveness of various parts,—all implying that the nervous centres which control this extensive machinery are implicated. The two theories of the "central" and the "peripheric" origin of hysteria or "hysterical" disorders are not in any way incompatible the one with the other, as will be apparent from reading the above statement of the possible conditions in cases where hysterical phenomena are observed. It is probable that the condition of the central organs is really the more important of the two, and that hysterical phenomena only occur in cases where the central organs are unduly impressionable. And in one sense of the word they may be said therefore to be diseased. But we have to go further than this, and, admitting a "diseased" condition of the nervous centres, we have to explain the alternate presence and absence of hysterical phenomena in the same case. In order to explain that it is necessary to assume either (1) that the central organs undergo at various times changes, or (2) that they are operated upon from without through the intervention of nerves distributed to other organs of the body. In other words, there is either (1) a centrally originated nervous disturbance, or (2) a peripheric irritant action giving rise to the manifestations in question.

My own observations have led me to the conclusion that in hysteria and hysterical disorders we have for the most part what have been termed since the days of Marshall Hall "reflex" symptoms, originated by a disturbance or irritation *primarily* acting, not in the central nervous system, but at its periphery, the central nervous system being in many cases unduly impressionable, and therefore more readily acted on by reflex disturbing agencies. In certain cases the disturbance may be originated emotionally.

It has been long the opinion of those who have made diseases of the generative organs their especial study—dating, in fact, from the Hippocratic era—that irritation of

these organs plays a very important part in the production of "hysteria."

Up to the present time the state of knowledge in reference to the diseases of the generative organs in women has not been sufficiently advanced to enable gynæcologists to define precisely the *modus operandi* and the exact nature of the irritation involving the female generative organs which is capable of exciting hysterical phenomena, and hence the assertion of gynæcologists to the effect that these hysterical phenomena do originate in the sexual organs has been discredited. The fact that attacks resembling those observed in women are liable to occur in the male sex has been made the basis of an argument that the female generative organs can have nothing to do with hysteria. This is not, however, a reasonable conclusion. It is well known that convulsions, for instance, may be produced in various ways; the nervous central organs are presumably not very different in the two sexes. There is nothing extraordinary in the fact that convulsions or spasmodic movements should be observed in both sexes, the convulsive movements being so much alike as to be hardly distinguishable. But that proves nothing as to the exciting cause of the attacks in question, nor does it in any way render it impossible that the uterus or the ovaries may be the exciting cause of such attacks in the female sex. Looking at the predominance of the emotional nervous element in the female; looking also at the peculiarities of the sexual organs, it would rather be anticipated that irritation of these organs would be more likely to derange the nervous centres in the female than irritation of the sexual organs in the male.

In the last edition of this work (1872) I described, under the head of Nervous Disorders referable to the Uterus, hysteria, epileptiform convulsions, nausea, and vomiting, as symptoms due to reflex irritation seated in the uterus. Since that time further observation has enabled me to verify in many cases the truth of the theory there put forward. Other observers have also been working in the same direction. Dr. Engelmann has published a very interesting paper "On Hystero-neuroses," * a term well adapted as a heading under which to classify and arrange those affections in which the uterus can be shown to have an important controlling or originating influence. In this paper he de-

* "Amer. Gynæc. Trans.," vol. ii., 1878.

scribes *seriatim* the reflex disturbances of the brain, the eye, the pharynx, the larynx, the bronchi, the breasts, the joints, the stomach, and the hystero-neuroses of pregnancy. Certain cases of epilepsy are attributed by Dr. Engelmann to reflex irritation proceeding from the uterus, but he does not apparently attribute the phenomenon of hysterical convulsions to this source. In this respect Dr. Engelmann has not taken the same road as myself. But in regard to the hystero-neurosis of the stomach resulting in vomiting, Dr. Engelmann's views appear to be quite in accordance with my own, and he gives many cases to show the connection between uterine irritation and severe vomiting; not only so, but in reference to the vomiting of pregnancy his observations are singularly confirmatory of those which I published some years ago.

The term "hystero-neurosis" employed by Dr. Engelmann seems to me to be a very valuable one.

The precise relationship subsisting between the uterus and the ovaries as disturbing elements is still matter for discussion. The conclusion which I have arrived at, taking the various facts into consideration which are adducible, is that in the majority of cases the uterus is responsible for reflex disturbance. This is not, however, the conclusion arrived at by all authorities, and indeed the source of the so-called hysterical affections has been of late years decidedly attributed to the ovaries by the latest writer on the subject, Professor Charcot, whose researches on the subject of hysteria and hystero-epilepsy have deservedly attracted so much attention. Charcot adopts the view of Negrier that the ovaries are responsible for the convulsive manifestation in question.

The neuroses, reflex effects of uterine irritation, appear to be many in number. Arranged in the order of their frequency they are:

Nausea and Vomiting.

Hysterical Attacks and so-called "Hysterical" Sensations.

Hystero-epilepsy.

Reflex Mental Disturbances.

Cephalalgia.

CHAPTER XXXVII.

Hystero-neuroses (*continued*)—Hysterical Nausea and Vomiting, due to Reflex Uterine Irritation.

Nausea and Vomiting very common Symptoms in Cases of Uterine Disease—It is a Reflex Hystero-neurosis—Frequent Association with Uterine Flexion—Various Conditions of Softness or Hardness of the Flexed Uterus—Various Degrees of Severity of the Nausea or Sickness—Illustrative Cases—Engelmann's Views.
Treatment.

It is an unquestionable fact that nausea and vomiting are very common in connection with uterine disease. This is a fact which many years of careful observation has made me acquainted with. This gastric disturbance appears to be of reflex origin, and to be originated in the uterus when in a state of disease. There is no doubt that disease of the ovaries is also capable of originating reflex nausea and vomiting, but my own observation leads me to the conclusion that the uterus is responsible for the production of this troublesome reflex disturbance in the large majority of cases. It is very rare to meet with a case of severe flexion of the uterus unaccompanied with such reflex irritation or nausea, although this affection is now and then unattended with nausea or vomiting. This reflex nausea and vomiting may be very slight, or it may be most severe in frequency and in degree. It is by far the most common of the reflex symptoms (hystero-neuroses) producible by disease of the uterus, the hysterical class of reflex symptoms occurring far more rarely. This reflex nausea and vomiting is one of the most common of the symptoms observed in cases of uterine disease (see chapter on Symptomatology of the Uterus).

It is surprising, looking at the extreme frequency with which nausea and vomiting really occur, that more has not been said about these gastric disturbances in connection with uterine disease. In the last edition of this work special notice was directed to this important subject. Dr. Engelmann,* of St. Louis, has more recently published some valuable remarks thereon, which are in full conform-

* On "Hystero-neuroses."—"Amer. Gynæc. Trans.," vol. ii., 1878.

ity with the conclusions I have myself been led to form on the matter.

The disease which more especially seems to occasion this gastric reflex disturbance is flexion of the uterus. The proof of the truth of this statement has in numberless cases been made evident to me by the remarkable results in the relief of the sickness and nausea which have been observed to follow treatment directed to the cure of the flexion of the uterus in such cases. These results have been so uniform, the exceptions so very rare in which marked relief has not been thus obtained, that the weight of evidence is irresistible.

In the last edition of this work (1872) the following paragraph occurs:

"*Connection between Nausea and Vomiting and Disease of the Uterus.*—For many years I have carefully and rigidly analyzed the cases of uterine disease which have come before me, with the endeavor to establish definite relations between symptoms and alterations or lesions. Sickness and nausea are so frequently attendant on uterine disease that this symptom necessarily comes very commonly under observation. Facts have led me to establish a very close connection between nausea and sickness, and flexions of the uterus. Indeed nausea and vomiting are rather common symptoms in cases of flexion of the non-impregnated uterus, though it by no means follows that every case of flexion will be attended with nausea and vomiting. Endeavoring to trace the connection between the flexion and the nausea or vomiting, I was led to the conclusion, that it was more likely to be observed in cases where the flexion led to retention of the secretions of the organ, as in dysmenorrhœa, and in certain other cases where the flexion was severe, independently of such evidence of retention of fluid in the uterus. Thus, severe flexion alone, or coupled with retention of fluid in the uterus, have seemed to me to be demonstrably and unmistakably the cause or essential accompaniment of the troublesome nausea and vomiting observed in the non-pregnant condition. The os and cervix uteri are not uncommonly under such circumstances turgid, congested, and otherwise somewhat changed. The fulness, congestion, or so-called inflammation of the os and cervix uteri has been noticed in connection with obstinate vomiting by previous observers, and has been assumed to be the cause of the symptom. It will quite readily fall in

with my view of the matter to accept this position, but my explanation goes beyond it, and is to the effect that the condition of congestion of the os is really secondary to the more important lesion, the alteration in the shape (flexion) of the uterus."

Since I became acquainted with the remarkable connection between nausea and flexions of the uterus, I have had many opportunities for verifying the accuracy of this conclusion. Indeed I observe the symptom so frequently in cases of flexion of the uterus, that I have come to look upon it as almost a part and parcel of the disease. Flexions do not invariably give rise to vomiting and nausea. But it may be stated, as a rule to which there are few exceptions, that when a patient presenting other uterine symptoms is found to be liable to nausea or sickness recurring from time to time, it may be pretty confidently predicted that the nausea and sickness are due to uterine flexion. When the sickness is obstinate and of long standing, the prediction may be still more confidently made. I have on many occasions seen patients who had been supposed to be suffering from chronic disease of the stomach, owing to the persistent nausea or vomiting, and in which it was proved beyond question that the uterus was the organ really responsible for these symptoms. In the course of my experience, I have seen as many as fifteen to twenty cases where the long-continued sickness due to uterine flexion had so fearfully reduced the vital power by starvation, that recovery seemed almost impossible. And even in the worst of these cases the symptoms ceased almost directly the source of irritation was removed.

In very many cases the gastric disturbance is less severe, but yet it is a serious matter; and in a larger number of cases still it is present as an occasional symptom, only the patient considers that she is troubled with "biliousness," and is not aware that the supposed biliousness is really caused by the uterus. Again, in not a few cases the sickness is only observed at the menstrual periods: sometimes it is so severe at those times that the patient is literally *hors de combat* for one or two days owing to its intensity.

It is pretty constantly observed that these symptoms are increased by movement, or by exertion of any kind; even sitting at the table for meals is often enough to bring on sickness or nausea. This is a mechanical effect of the po-

sition of the body, which by intensifying the flexion for the moment brings on nausea.

The recumbent dorsal position gives relief to sickness when caused by anteflexion. But when the uterus is retroflexed, the dorsal recumbent position often aggravates it. The reason for which is sufficiently obvious.

The cases most difficult to cure are those in which the uterus is extremely soft, and follows the action of gravity most readily. It is not easy in some of these cases to preserve the uterus in a state of real repose. The uterus is readily straightened, but it is not easy to preserve it in this condition. Slight retroflexion follows on the removal of the anteflexion, and *vice versâ*. The recurrence of the sickness in such cases indicates that the treatment is insufficient.

But in many severe cases, the uterus is not remarkably soft at the time the patient comes under observation. Perhaps the case has been partly cured, and, the power of taking nourishment having returned, the uterus has become tolerably firm and rigid; indeed, in some cases there is actual hypertrophy of portions of the uterus—*e.g.*, the lips of the cervix uteri. Then an aggravation of the flexion occurs, and the sickness returns with redoubled energy. Under these circumstances the relief afforded by straightening the uterus is almost magical in its rapidity.

The *modus operandi* of the flexion in inducing this reflex symptom is a matter of great interest. It appears to me to be due to the compression of uterine nerves, consequent on the squeezing or stretching of certain portions of the uterine tissues. (See remarks on this subject in a former chapter, at page 210.) Careful observation has convinced me that in most cases the irritation has its starting point at the situation where the compression is greatest, viz., at the angle of flexion—for this part is often found *sensitive to the touch* in such cases, and it is found that the straightening process has the effect of removing simultaneously both the sickness and the undue sensitiveness to touch.

Case of Acute Vomiting from Retroflexion of the Uterus.—Some years ago I saw a lady who was at that time suffering from aggravated nausea and vomiting. She had then been unable to take food of any description for over two weeks. Everything in the shape of food was instantly returned, and the eminent practitioner who had been in attendance upon her expressed his fears that she would actually perish from

inanition. On examination it was found that the patient was suffering from severe retroflexion of the uterus, which there was evidence to show was of long standing, and which had probably undergone acute aggravation within the previous few months. Nothing could be more distressing than the state to which the patient was reduced. Conjointly with treatment to restore the shape of the uterus, it was necessary to sustain life by the administration of beef-tea, one teaspoonful at a time given very frequently, this being the utmost the patient could take for some time, although the sickness underwent a material improvement the moment proper local treatment was adopted.

It invariably happened, when the treatment was suspended, and the instrument removed, that the sickness returned.

*A Case of Acute Hysterical Vomiting, of Ten Months' Duration, caused by Displacement of the Uterus.**—A young lady, æt. 20, the subject of this case, was admitted into the All Saints' Institution, Gower Street, in December, 1879. The general history of the case was as follows: She has always been accustomed to take a good deal of exercise, has led a very active life, but has not taken for some years what would be considered an average quantity of food; the reason for which has been a general disinclination, coupled apparently with the existence of a notion on her part that she did not require much. For the last two or three years she has been in the habit of playing lawn-tennis a good deal, and has done duty in playing the harmonium at a place of worship. Menstruation has never been regular. There have been occasional intervals of two months, but at times the periods have occurred too often and too profusely. There has been a complete cessation of menstruation for the last ten months, since which time she has been ill.

Present Illness.—The patient has been ill for ten months. Since February, 1879, she has suffered from obstinate sickness, which, at first not very severe, gradually became worse and worse. She has not been able to retain food in the stomach for the whole of this period. Of late, the nausea has become more severe. She has now for some little time been able to retain only koumyss in small quantities at a time, the smallest particle of any solid food being rejected at once. She has become excessively emaciated.

* This case is reported in the "Trans. of the Clin. Soc.," vol. xiii., p. 346.

Her weight a year ago was ten stone; it is now stated to be five or five and a half stone only. Her weakness is extreme—she has been unable to sleep, and her general condition is deplorable. Any attempt to take exercise has been attended with aggravation of the symptoms. It was conjectured by her previous medical attendant that she was suffering from some uterine displacement.

Condition on Admission (*December* 19, 1879).—Patient constantly sick; skin moist; there is a commencing bed-sore over the sacrum. Bowels open; micturition frequent. Pulse exceedingly feeble. Examination of the pelvis and its contents showed that the uterus was very low down in the pelvis, much swollen, and in a condition of acute anteversion, with some considerable amount of anteflexion. The uterus seemed very wide from side to side, owing to general engorgement. It was decided that the sickness was due to the condition of the uterus. In regard to the cause of the displacement and distortion, the patient did not at the time mention it; but a few weeks later she said that in the month of February, 1879, she one day jumped from the top of some seats in a schoolroom six feet in height, to the floor. Another young lady who was with her at the time performed the same feat. They were both of them made sick by the effort. The other young lady went to bed for six weeks, feeling ill, and having, as she thought, a cold. This patient took no notice of the effects of the leap and had, in fact, forgotten it. But the sickness appears to have set in at precisely this time; and there seems little doubt that the leap was responsible for the mischief.

For the first week the treatment adopted was as follows: Nutrient enemata of beef-tea, with a small quantity of brandy, and a few drops of laudanum, were administered three times daily. The patient was ordered to take only a little koumyss by the mouth. Once every hour, during the day, she was placed in the knee-elbow position for two or three minutes, in order to raise the uterus from its low position. At the beginning of the second week she had much improved; the sickness was less, but the patient extremely irritable; no sleep, except for a very short space of time; complaint of great headache, and a condition of general unrest. The uterine sound was now used for the first time, and by its means the uterus was raised, and the position of the fundus changed. The effect of the use of the sound was at first, for two days, to reproduce the sickness to some

extent, but it then became mitigated. At the end of the second week her condition was much improved; she was still taking nutrient enemata and iced champagne by the mouth. Brand's essence of beef and some other food were now given, but with not much success, the stomach still rejecting the greater part of things administered, except the champagne. The koumyss was given up during the second week.

Fourteen days after admission, a small-sized ebonite cradle pessary was introduced, and it has since remained undisturbed. During the third week, food began to be tolerated by the stomach. At first, Darby's peptone was given in small doses, mixed with a little water, frequently. In three days, the patient tiring of this, gravy soup from a confectioner's was given, one, two, or three spoonfuls at a time; three to four glasses of champagne daily, and about one and a half ounces of brandy, the latter with enemata; also biscuits (crackers) in small quantity. The nausea entirely left her at the end of this, the third week. During the fourth week, the improvement was very marked. She could now take meat in the solid state, and the enemata were abandoned. The power of sleep was restored, and the condition changed for one of absolute tranquillity. The pulse, which on admission and during the first two weeks was under 50, now beat at 80 to the minute. After the fourth week, the patient's appetite became ravenous. It seemed impossible to give her enough; all kinds of food were equally agreeable to her—the anxiety when one meal was over was for the arrival of the next. Six weeks after admission she was permitted to get up, and in a week walked round the room, a quarter of an hour at a time, without any ill effects. Seven weeks after admission, the patient was convalescent and fit to leave the Institution. Her condition is now wonderfully altered for the better; the cheeks have filled out, and she has entirely lost the look of extreme illness. All kinds of food are taken, and in large quantities. She has gained two stone in weight. Six weeks afterward menstruation returned, and the patient was reported perfectly well, and in full enjoyment of active life.

Remarks.—The case is, in my opinion, to be read thus: The patient was ill-nourished, weakly, and in a bad state of health, before the actual illness began. The menstrual irregularities show that the uterus was in a disturbed condition also. It is probable that its tissues were soft, want-

ing in resistance, and that it was somewhat displaced and altered in shape before the commencement of the severe illness. The leap, which occurred in February, 1879, probably produced a sudden and considerable displacement of the fundus uteri downward and forward—acute anteversion and flexion; and from that time up to the period of admission the uterus remained in its displaced, distorted condition. A secondary result occurred, viz., a continued congestion and engorgement and consequent swelling of the uterus. Menstruation was thus also suppressed. The sickness was a reflex phenomenon due entirely to the irritation set up in the uterus. It completely disappeared when the uterus was restored to its proper shape and position. This restoration was effected by the use of the knee-elbow position, by the sound, and by the cradle pessary. There would have been no objection to the use of the cradle pessary at first, but it was thought best to employ other methods of raising the uterus during the first fortnight.

Acute Vomiting for Two Years, due to Anteflexion of the Uterus.—Another case was that of a single lady of 25 years of age who had been sent to Dr. Wilson Fox under the notion that she was suffering from ulceration of the stomach. Dr. Wilson Fox conjectured the uterus was at fault, and it proved so. This patient had suffered for two years from almost incessant vomiting and occasional hæmatemesis. The uterus was found soft, anteflexed (with posterior rotation). Suitable treatment in a short time completely removed the vomiting.

Severe Vomiting due to Anteflexion of the Uterus.—Another almost similar case was likewise sent to me by Dr. Wilson Fox in which the patient, a young lady, was reduced to the extreme of prostration—so much so, indeed, that her life was despaired of—in consequence of anteflexion of an extremely soft atonic uterus. This case equally yielded to a treatment directed to the rectification of the distortion and displacement of the uterus.

The following case is reported by Mr. L. C. Parkes, M.B., who assisted in the treatment:

Case of Anteflexion and Excessive Continued Vomiting.—Miss W. æt. 25. When at school her appetite was very small, and her principal meal was in the evening, not in the middle of the day. Enjoyed good health and menstruated regularly every four weeks until a little over three years ago, when she accompanied a younger sister to Davos

Platz. There she remained seven months. She "had no monthly periods during this time, as the cold stopped them." Since her return, she has menstruated very little, and states that on two occasions the periods were absent eleven and seven months. She says the fluid has been often very thick and lumpy. Miss W. has been under medical treatment for three years, less one month, at first for ulcers on the legs—which healed, but repeatedly broke out again a few weeks after healing; almost constant sickness, and frequent attacks of obstinate constipation and tympanitic distension of the abdomen, these attacks simulating obstruction of the bowels and occurring repeatedly, until her medical attendant came to regard them as hysterical, and advised her being sent away from home to be treated in an institution; and she was accordingly admitted into the All Saints' Institution on February 10.

Previous to admission her dietary seems to have been extremely low for many months, containing meat or fish only once a day in very small quantities. The other solid food consisted mainly of bread and butter, twice a day, in very small quantities also. For a year she has been sick after the conclusion of each meal. The sickness comes on five to ten minutes after she has finished eating. She has suffered for a long time from constant pain in the left side, which is relieved by hypodermic injections of morphia. These morphia injections have been given three times daily during the last year. In the autumn of 1881 nutrient enemata were administered for a period of fourteen weeks, and aperient enemata daily for the last year. She has at times taken pancreatized and peptonized food.

Condition on Admission.—The patient is pale and emaciated, weight 6 st. 10 lbs. The mucous membranes are not very anæmic. The tongue is very red and clean. She complains of a constant pain in the left side above and in the left groin. On examination the uterus was found to be markedly anteflexed and its substance very soft and flabby. For the first three or four days after admission the patient took food well, meat, vegetables, etc., without any subsequent sickness. The morphia injections were discontinued on admission.

On the 5th day after admission the patient began to be sick at first only once or twice in the day.

On February 22 a No. 1 ebonite bar cradle pessary was introduced. This was followed by an excessive muco-

sanguineous discharge. The sickness gradually became worse, every kind of food being very soon rejected. The diet was accordingly reduced to a teaspoonful of Brand's essence every two hours, and ℥ ii. brandy in the day. The abdomen was well painted with tinct. iodi., and an aperient enema given every morning.

On February 25 the Brand's essence and brandy were discontinued and enemata of beef-tea and brandy substituted, one every six hours. After two days of this treatment the enemata were returned, unaltered in color but of bad odor, so they were discontinued.

On February 27 the pessary was removed. The sickness is, if anything, worse than before. She is now taking rusks and champagne, which are partly retained. The sound was introduced on the 28th and the uterus straightened.

March 1.—Oysters were added to the rusks and champagne. She manages to retain this fairly well. There is still the same amount of vaginal discharge. March 6.—An elastic No. 2 cradle pessary was introduced. The sickness continues about the same. The nutrient injections have been resumed, but return unaltered. March 8.—The patient is evidently losing ground and appears weaker and more depressed. The pulse is over 100 and compressible. All food taken by the mouth is returned, the solid parts being precipitated from the fluid. Her condition was now critical and gave rise to a good deal of alarm; fears were entertained as to her recovery, owing to the excessive weakness and prostration and the apparent absence of digestive power. March 9.—She now takes peptonized beef-jelly and milk, but is unable to retain it. A hypodermic injection of morphia, gr. ¼ daily, is now given. The peptonized food is discontinued.

After this date, Miss W. began to improve. She returned to the former diet of rusks, oysters, and champagne, which seemed to cause the least sickness. The pulse gradually became stronger and less frequent, and the tongue lost by degrees its vivid red irritable character. Toast and tea, bacon, fish, bread and butter, were gradually added to the diet and superseded the oysters and champagne. The sickness gradually became less frequent, and ceased altogether before the end of March. By the middle of April she was able to get out of bed and sit up, and was taking meals of fish, meat, etc. On May 1 the period commenced, but only lasted a day; the pain in the side was still present,

but was decidedly less than before. At the end of May, Miss W. continued to make good progress and was going down to the sea-side. Her weight was then 8 st. 2 lbs., gain since admission being 1 st. 8 lbs.

The constant pain felt in the left inguinal region in this case was due to the anteflexion of the uterus.

The foregoing are typical severe cases, but many more could be quoted in which the symptoms were less severe, but the results of treatment equally satisfactory. In the report of sixty-seven cases of uterine flexion treated in the All Saints' Institution during seven years, published in vol. — of the "Obstetrical Transactions," I have given particulars of certain cases of this kind.

It may be useful to quote here some of the conclusions arrived at by Engelmann* on this subject.

Engelmann regards affections of the stomach as the most frequent of the hystero-neuroses. He divides them into three classes: (A) constant; (B) menstrual; (C) due to pregnancy.

Under A the symptoms are fulness of epigastric region, loss of appetite, nausea, and vomiting. He gives three cases of (1) retroversion, when symptoms were at once relieved by a Hodge pessary; (2) case of a valvular closure of internal os by a small fibroid causing vomiting; (3) intractable vomiting, etc., for several years, caused by indurated conical cervix with stenosis of canal, cured by incision and dilatation. (Probably a case of anteflexion.—G. H.)

Under B, he states that at least one fourth of his hospital patients complain of the gastric trouble in connection with menstruation. The symptoms were most marked when the menstrual period was not regular or normal. "Of seven private cases of menstrual hystero-neurosis of the stomach, only one was free from severe uterine disease."

Under C, Engelmann classes the nausea, the vomiting, the epigastric distension, etc., occasionally found in pregnancy, among the hystero-neuroses.

Case of Sympathetic Hystero-neurosis of the Stomach (Dr. F. Formento, New York).† This was a case of intractable vomiting and hysterical convulsions, lasting for several years, caused by a peculiar condition of the os uteri. Patient married at æt. 21. Dysmenorrhœa before mar-

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* *Loc. cit.* † *Amer. Journ. Obst.*, vol. x., p. 455.

riage. Suppression for three months after marriage. No pregnancy, but vomiting observed occasionally. The vomiting increased in severity, and became almost constant. Great uneasiness at epigastrium. Nutrition greatly impaired; extreme prostration; prolonged anæmic condition. After a few months, convulsive attacks, a tetanic condition of the muscles, sometimes a cataleptic condition, at other times trismus, opisthotonos, these attacks occurring several times a month. Various methods of treatment unavailing. Menstruation going on, but dysmenorrhœa observed. On examination, conical cervix, hard, resistant to touch, almost fibrous, of a deep red color, and smooth surface, external os so small as to be almost invisible, not allowing smallest sound to penetrate; uterus of normal size and position.

Marion Sims's operation was performed. Immediate relief of vomiting. Restoration of strength complete. After ten months return of the symptoms. Renewal of operation, os having become contracted, and sponges and dilators used once or twice a month for some months. Recurrency and a third and a fourth repetition. Will she ever recover permanently? says the author, of this case.

The *nausea and vomiting of pregnancy* has been discussed in a separate chapter (see p. 391, vol. i). The views there enunciated as to the cause of vomiting in pregnancy have been suggested by the observation, in the first place, of cases of vomiting in the non-pregnant condition; and it will be found that a careful study of the phenomena of vomiting and nausea in the pregnant and in the non-pregnant condition reveals an uniform and identical cause in both sets of cases.

TREATMENT.

The effects of mechanical treatment (by which is meant not necessarily the application of instruments) in relieving the sickness in the cases now under consideration are most remarkable. In the milder variety of cases the horizontal position is sufficient to give relief, but when the uterus is markedly flexed this is not sufficient, for some cases require the dorsal position (cases of anteflexion) and others require the prone position (cases of retroflexion). In the really severe cases little benefit will be derived from the horizontal position alone—internal mechanical treatment, use of

the sound, use of suitable pessaries, etc., are required; and judiciously selected treatment of this kind is capable of effecting very marked benefit—the cessation of the sickness or its speedy amelioration. Internal mechanical treatment is, however, not always successful just at first. The first effect of such treatment is sometimes to produce a temporary intensification of the severe symptoms, and it then seems as if the treatment was worse than useless. But this is a temporary effect only; the case soon assumes a more favorable aspect, and a marked improvement sets in most decided and encouraging in character. This temporary bad effect was observed in the case mentioned at page 136, and the patient was so ill that it seemed as if the treatment had better be omitted. It was, however, persisted in, with the best results. I only know of one case where the treatment could not be continued: in this instance it was deemed advisable to wait for a time as the patient's condition was not a critical one.

In cases where the restoration of the uterus to its proper shape is delayed, or when the sickness arises from other alterations of the uterus, palliative measures are required. Above all, the strength has to be sustained. In severe cases, where the stomach persistently rejects food, it is best at once to give up the idea of administering solid food of any kind. The patient should be made to suck small pieces of ice from time to time, and a teaspoonful of milk, or milk-and-water, should be swallowed every half hour, or more frequently, if possible. Minute quantities of brandy and water or champagne may be given every hour. Drugs given by the mouth, in really severe cases, appear to do more harm than good. An opiate liniment rubbed in over the epigastric region, or morphia applied endermically, has been found of great service. If the milk or other nutritive material, such as beef-tea, which may be tried, are rejected by the stomach, it is best to relinquish for a time the attempt to feed the patient by the mouth at all, and to have recourse to injections. A beef-tea enema, with a few drops of laudanum and two or three teaspoonfuls of brandy, may be given as often as may be judged necessary, the return to a more natural method of feeding being for a time postponed. Sedatives, antispasmodics or medicines of other kinds may or may not be indicated, according to the peculiarities of the case, but they will be best administered in these severe cases by the rectum.

In the less severe cases, where food is capable of being taken by the stomach with more or less facility, and where the vomiting is only occasional, a carefully adjusted diet will still be the best means of giving the patient relief, and it will be a matter of experiment as to what kind of food suits best. Soda-water and milk are very generally borne by the stomach, but more substantial nourishment may be given, such as the case admits of. Pepsine is often very serviceable in cases where the digestive powers are much weakened. Various forms of pre-digested food are now available—Dr. William Roberts's (of Manchester) peptonized preparations, etc. Raw oysters succeeded in one case when all other kinds of food failed.

Counter-irritation, by blisters to the epigastrium, have been strongly recommended, and I have myself used them with advantage. But since I have traced the connection between obstinate nausea and vomiting, and flexions, I have rarely had occasion to use these or other palliative procedures, the removal of the uterine flexion answering every purpose.

CHAPTER XXXVIII.

HYSTERO-NEUROSES (*continued*)—HYSTERIA, HYSTERICAL CONVULSIONS, HYSTERO-EPILEPSY.

HYSTERIA—HYSTERICAL CONVULSIONS—HYSTERO-EPILEPSY. — Various Degrees of Hysteria—Milder Forms of the Affection—Phenomena observed in the simple Hysteric Paroxysm—More Severe Cases in which Convulsions are observed—Character of the Convulsions—Differentiation from Epilepsy considered—Hystero-epilepsy—Views of Gowers and Charcot—Author's Observations on the Etiology of Hysteria and Hystero-epilepsy—Series of Eighteen Cases Illustrating the Connection between Flexions of the Uterus and Hysteria or Hystero-epilepsy—Criticism of Charcot's Views as to the Effects of Ovarian Compression—General Conclusions.

TREATMENT.

The phenomena of hysteria, using the word in the widest sense, may be conveniently classed as follows:

I. A state of predisposition to hysteria, evidenced by excess of emotional tendencies, behavior generally marked, or liable to be marked, by exaggeration of emotional actions.

II. Hysterical paroxysms without convulsions.

III. Hysterical fits with distinct convulsions.

IV. Hysterical fits allied closely to epileptic attacks, and generally described as hystero-epilepsy.

V. Simulation of other diseases, *e.g.*, joint disease.

I. *The Hysterical Predisposition.*—An important generalization has been made by many writers, viz., that hysterical phenomena are more usually witnessed when there is a condition of "debility" present. Debility is frequently synonymous with irritability; weakly individuals are frequently "nervous," which is only another way of saying that they are too readily excited and are too impressionable. The word "hysterical" is frequently used as a synonym for "weak." A common mistake appears, however, to be the use of the word "fanciful" in describing some of these hysterical symptoms.

The hysterically predisposed patient may never have a real hysterical attack in the absence of any decided exciting cause.

II. *Actual Hysterical Paroxysms, without Convulsions.*—The hysteric paroxysm in its simplest form is commonly ushered in by pain or discomfort at or near the umbilicus. Next occurs a sensation as of something rising to the throat, a feeling of choking or suffocation, or a sensation of a ball in the throat—*globus hystericus.* Rapidly the patient then bursts into laughing or crying or sobbing, at the end of which there follows a subsidence of the ebullition and recovery of composure, with a sensation of exhaustion. Coincidently with the termination of the paroxysm a flow of limpid urine is often observed.

Some of the incidents just described may be absent.

III. *Hysterical Fits with Distinct Convulsions.*—In this class of cases the phenomena are very marked. We have the simple hysteric paroxysm, but something more. The patient falls into a state of apparent unconsciousness very rapidly, and becomes affected with convulsive action of a very decided character. Practically it is necessary, owing to the close relationship between this class of cases and the next (No. IV.), to consider the two together.

III. *and* IV. *Hysterical Fits with Convulsions and Hystero-epilepsy* (so-called).—Epileptic and hysterical convulsions have been frequently differentiated one from the other, but it appears that although there are typical forms in a con-

siderable number of cases, there are many instances in which the phenomena have characters partly of epileptic, and partly of an hysterical nature.

The following is an epitome of the description given by Dr. Gowers* in his recently-published treatise:

In epilepsy (*grand mal*) there is loss of consciousness, together with continuous or intermitting convulsions, one or both. In slighter attacks (*petit mal*) there is usually transient loss of consciousness with little or no convulsion.

"The hysterical attacks vary much in character. There may be merely trifling emotional and spasmodic disturbance, such as is commonly understood by the designation, or there may be most severe and long-continued spasm, apparently rivalling a severe epileptic fit in the violence of the muscular contractions, attended with impairment if not actual loss of consciousness, and often with paroxysms of delirium. But the chief part of the muscular spasm which occurs in these attacks differs from that of an epileptic fit in being so grouped as to resemble that which may be produced by the will. The convulsive movements have therefore a quasi-purposive aspect, they are *co-ordinate* in character though excessive in degree. At the onset there may be tonic or clonic spasm (a pseudo-epileptic stage), but this rarely resembles closely that which occurs in epilepsy."

Instead of the term "hysterical" Dr. Gowers uses the word "hysteroid"—a term proposed by Dr. W. Roberts to denominate the severe fits of the "co-ordinated" convulsion—preferring this term to "epileptic hysteria," "hysterical epilepsy," or "hystero-epilepsy."

The two classes, epileptic and hysterical, shade into each other. Thus "the severe hysteroid fits may recur during years, in very much the same manner as do epileptic fits. . . . Moreover, hysteroid or co-ordinated convulsion often succeeds a true epileptic fit. . . . It is often most difficult, even impossible, to learn from the description of hysteroid convulsions, whether they occur alone or whether they succeed slight epileptic seizures. . . . The initial convulsion of many pure hysteroid fits is pseudo-epileptic. . . . There are rare cases in which the attacks are actually of a nature intermediate between the two."

In 1,000 cases observed by Dr. Gowers in which the form

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* "Epilepsy and other Chronic Convulsive Diseases," etc. (Churchill, 1881), p. 2.

of convulsion could be ascertained, it was co-ordinated or hysteroid in 185, or 18½ per cent, and "up to the fourth decade of life, one third of the chronic convulsive cases presenting hysteroid phenomena (primary or part epileptic) occur in males.*

It does not appear that Dr. Gowers draws any sharp line between the slight "hysterical" and the severe hysteroid or co-ordinated attacks. Thus, he says, "these attacks (hysteroid) vary greatly in severity and character. When slight they are of the trifling character popularly known as a 'fit of hysterics,' into which an emotional patient will work herself up, and in which there is no distinct affection of consciousness. When severe the violence of the spasmodic movements is almost inconceivable. . . . Similar variations are seen in the mental disturbance which attends the attack. This may be trifling, and amount only to an abnormal emotional state, or it may be so severe that for a time the patient is in a state of maniacal frenzy." So again, the laryngeal spasm observed in severe cases is "no doubt an extreme degree of the disturbance which in slighter measure causes the globus hystericus." Moreover, "in the patients who suffer from these convulsions other symptoms of hysteria are frequent, and consist of the globus hystericus, aphonia, and the like, but these are usually slight in degree."

The "hysteroid" convulsions described as above by Dr. Gowers include the attacks observed in the female sex as well as the male. And it is evident that in regard to the attacks themselves there is no striking difference between "hysteroid" attacks in men and women.

Charcot's views on the subject of classification are as follows:

A. Hysteria and epilepsy may remain distinct from each other in the same individual. 1. Hysteria may be grafted on epilepsy. 2. Epilepsy may be superadded to hysteria.

B. The hysteria and the epilepsy are coeval. These are "seizure fits." The so-called epileptic form he regards as the highest degree of development of that combination of hysteria.

Attacks of hystero-epilepsy attaining the severity of those observed by MM. Charcot and Richer in Paris are not witnessed in this country. On this subject Dr. Gowers says

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* Gowers, *op. cit.*, p. 19.

that "the attacks observed in the Salpêtrière patients commence by a convulsive seizure resembling a true epileptic fit very closely, whereas in the attacks which occur in the natives of this country, the initial tonic stage (though it may resemble that seen in certain aberrant forms of epilepsy) bears little resemblance to the spasm of a typical epileptic fit."

The observations of Charcot are most interesting, and the phenomena of the hysterical paroxysm have been described by him, and still more recently by Richer,* in a manner which leaves little to be desired so far as the outward manifestations, convulsions, spasms, anæsthesia, paralyses, temporary intellectual disturbances, etc., are concerned. And these delineations are also most complete in regard to the manner in which the manifestations in question are capable of being modified or influenced by the action of *external* agencies. The ebullition, as it may be termed, has, in short, been pictured in a most graphic manner.

Circumstances have led me to investigate the various hysterical manifestations observable, from an *etiological* point of view. I had no predisposition to take any particular view of the matter, and it was only by repeated observation that I became convinced that the uterus is generally in a state of irritation in cases where these manifestations are observed; thus, in fact, confirming the more ancient theory of the subject. And I was induced to take this view of the influence (etiologically) of the uterus from the circumstance that in cases where the two conditions were conjoined—viz., uterine irritation and liability to attack—the attacks always appeared to cease on removing the irritation. In fact, experience revealed to me that in the course of treating the disorder of the uterus, the liability to hysterical attacks ceased. Further observation showed that the peculiar irritation productive of hysterical symptoms and attacks was always one and the same—viz., a flexed and distorted state of the uterus. Since I first became aware of this relation I have omitted no opportunity which has occurred to me for verifying and repeating the observation. Cases of this kind now referred to do not present themselves with great frequency; cases of marked hysterical paroxysms, so far as my experience goes, are not very com-

* "Études Cliniques sur l'Hystéro-épilepsie ou Grande Hystérie." Par Dr. Paul Richer. Paris; Delahaye. 1881.

mon, but during the last ten years, during which I have been testing the matter in question, several instances have fallen under my notice; and as yet the facts I have collected are strictly confirmatory of the truth of the above generalization.

There appear to be two classes of cases:

1. Those in which the attacks are induced primarily by some strong emotion—the reception of distressing news, a fright of any kind, a severe mental shock, etc. Here the operation of the causes is a direct action on the central nervous system, which in such cases may or may not be weakened in some way, and predisposed, or not, to be affected by an excitement acting from without. These cases are undoubtedly met with in practice, but they seem to be rather rare.

2. Those in which the attacks are induced primarily by a reflex disturbance from within, and quite distinctly so. This class of cases is numerically far more frequent than those classed in the foregoing list. They include cases in which the hysterical manifestations are severe, and more or less constantly liable to occur.

Now, the evidence which I have been able to collect, to me convincingly shows that the reflex irritation causing these attacks and other hysterical manifestations is an irritation having its seat in the uterus, and that the particular irritation most potent in producing the reflex disturbance is flexion of the uterus. This view is one which I expressed about twelve years ago.

In the course of my professional experience I have only met with cases which seemed to be cases of hysteria produced in the reflex manner, and I have seen none in which hysteria of a severe character has been brought about emotionally. I do not deny the existence of the latter class of cases (certain of M. Charcot's cases, for instance), but it so happens that I have seen none. On the other hand, I have met with many cases coming under the former category, and in such cases the uterus was found to be the cause of the symptoms; the facts of the cases, the results of treatment, and the whole phenomena of the cases in question, indicating in what has seemed to me a most unmistakable manner that this view of the case was a correct one.

What the precise condition of the uterus is which is capable of giving rise to such remarkable manifestations is a matter of great interest. The results of my observations

have led me to the conclusion that in these cases the uterus is in a condition of what may be termed traumatic congestion, by which is meant that the blood current is forcibly arrested in the tissues of the uterus. The common cause of such arrest in these cases is compression of the organ at its centre by the bending or flexion of the uterus. There occurs as a result acute congestion of the body of the uterus, which becomes aggravated by certain movements and diminished by others. Whence it happens that exertions capable of increasing the flexion are found to bring on the attacks or other hysterical manifestations, while, as a rule, rest and the horizontal position are equally potent in removing them or in preventing their occurrence.

The word "traumatic" seems suitable as explaining the nature of the congestion under these circumstances.

The intensity of the traumatic congestion in different cases appears to vary, but its main characteristics seem to be the same in all instances that I have observed. And the worst and severest cases of hysterical convulsions have been those in which the degree of traumatic congestion of the uterus was actually greatest.

There is another etiological moment present—viz., the compression of the nervous filaments of the uterine tissue at the precise spot where the flexion compression is greatest. When the uterus is forcibly flexed, such compression occurs.

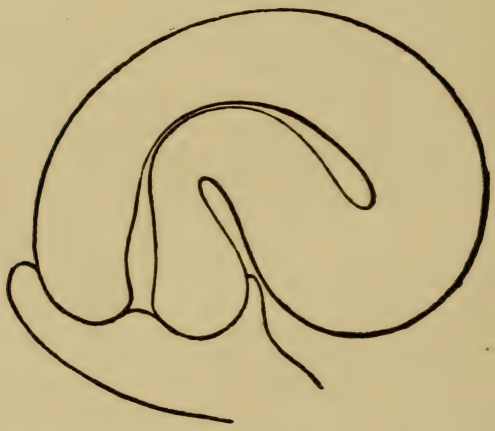
At the recent International Medical Congress I exhibited the model of a section of the uterus constructed in sponge. The model is six times the normal length of the uterus, but the thickness of the walls and the due relation of the parts are carefully preserved. The model is constructed in order to exhibit the effects of acute flexion of the uterus on the uterine tissues. It is observed that when the sponge uterus is bent so as to imitate the change of shape observed in acute flexion of the organ, the sponge is greatly compressed and squeezed together on the concave side of the bend. The model thus enables us to understand that the centre of the uterus is the seat of great compression in cases of flexion, which compression is increased by increase of the flexion and relieved by removal of the flexion. The sponge model also serves to illustrate the production of traumatic congestion, for the compression due to flexion is the cause of the interference with the circulation of the uterus.

Whether the traumatic congestion of the uterus or the flexion compression is the more important in giving rise to

reflex hysterical manifestation, it does not appear to be easy to determine. Possibly both moments are important. And it may be that the traumatic congestion operates in inducing hysterical phenomena by virtue of the compression of the uterine nerves in those parts of the uterus which are actually the seat of the congestion.

The accompanying drawings represent flexions of the uterus severe in degree. Fig. 160 shows a third degree of anteflexion of the uterus. Fig. 161 represents the uterus in a case of retroflexion in the third degree. The seat of

FIG. 160.*



the compression is principally the wall of the uterus on the concave side of the flexion.

I adduce in support of the views now enunciated a series of eighteen cases, arranged in chronological order, observed by me during the ten years from 1870 to 1880. I have observed other cases also, of which records have not been kept. The following series are all of which I have kept records. There are six cases in which the uterus was retroflexed and twelve in which anteflexion was observed.

CASE I. *Chronic Retroflexion; Severe Hysterical Attacks.*— Mrs. —— had been liable to frequent severe hysterical attacks (after which she usually remained in a state of quasi insensibility for some time) ever since her first confinement,

* Anteflexion of uterus (third degree).

which occurred upward of twelve years previously. Latterly severe sickness had occurred. The uterus was found acutely retroflexed. There was an absolute cessation of the hysterical attacks from the time the treatment of the retroflexion was commenced.

Case II. *Acute Anteflexion of the Uterus; almost Entire Suspension of Menstruation for Two Years; Severe Hysterical Attacks.*—The patient was single, æt. 19, a dressmaker. Two years ago attacked with "hysterics," at first severe, afterward less so. On one occasion she lost her voice for five months. Has had lately a peculiar cough. Menstrua-

Fig. 161.*



tion only twice in the two years. While in the hospital had several severe hysterical attacks, strong convulsive action and attempts to beat her head on the floor, sometimes several in the day, and a peculiar cough resembling that observed in laryngismus stridulus. The uterus was found to be in a state of acute anteflexion. A stem pessary was employed. The attacks at once became less frequent. In a month she was made out-patient: fits ceased. Two months later pessary removed, complete cure, and return of menstruation.

Case III. *Acute Anteversion of the Uterus; no Menstruation;*

* Retroflexion of uterus (third degree).

Severe Epileptiform Attacks.—The patient was single, æt. 17; never menstruated. For ten weeks has had fits, as many sometimes as twenty in a day. In service since age of ten years. Pains in hypogastrium, and frequent micturition for four months. Uterus anteverted. Sound easily introduced. Cradle pessary introduced. A month later the fits had become reduced in frequency, and she left the hospital. Menstruation appeared about two months after commencement of treatment and was followed by a complete cessation of the attacks.

Case IV. *Acute Anteflexion of the Uterus, probably of One Year's Duration; Convulsive Attacks occurring frequently during that Time.*—The patient was married, thirty years of age, had one child four and a half years old. Health tolerably good till one year ago. Six weeks' nursing a sick child appears to have made her ill. The illness began with an attack consisting of slight loss of consciousness for a moment, then convulsions. Since that time has had attacks —two or three a day as a rule; the attacks last a short time, are not accompanied with loss of consciousness as a rule, and during the last three months have become more intense; menstruation had also ceased for three months, but has just occurred again once. The uterus was found acutely anteflexed. A cradle pessary was applied: the sound used to strengthen the uterus. The attacks became at once reduced in frequency and intensity. During the first four days had altogether eleven attacks; during the succeeding ten days only five attacks; altogether she was under observation for seven weeks: the attacks latterly only occurred once in two or three days, and were very slight, while menstruation had occurred a second time rather profusely.*

Case V. *Retroflexion of the Uterus; Hysterical Attacks following Exertion.*—Mrs. ——, æt. 19, married fourteen months. Has had no child. Suffers from hysterical attacks, and her medical attendant believed her to be affected with retroflexion of the uterus.

It appears that four years before marriage she had a severe attack of scarlet fever, which left her so weak that she did not walk for one year, and then began with crutches. Since recovering from this attack she has been liable to what are termed hysterical attacks, following any exertion.

* Fuller particulars of this case in *Lancet*, August 7, 1875.

Menstruation is profuse and too frequent. The uterus is soft to the touch, very distinctly retroflexed. A pessary was applied.

The patient completely recovered, aud had a child two years afterward.

CASE VI. *Acute Anteflexion; Severe Hysterical Attacks.*—Mrs. ——, æt. 34. Has been married fifteen years; no children. Menstruation always painful. Has had bearing-down for years. Ten years ago had St. Vitus's dance, not severely; but has occasional symptoms on and off, such as nervousness for an hour or two when excited. Six months ago had been nursing, for five months severely, and began to feel excessive bearing-down and strangury, became insensible for a week, and urine had to be drawn artificially. Had also pain in abdomen and hypogastric region, the difficulty in passing water continuing. She had severe convulsions at intervals during the time. Ever since this time she has had severe attacks of what are termed "strong hysterics" after any slight fatigue. Uterus in a state of acute anteflexion. A cradle pessary was applied. Relief. Later history not known.

CASE VII. *Retroflexion of the Uterus; Hysterical Attacks.*—E. J., a cook, single, æt. 26. Three years ago was under treatment for uterine affection. Has suffered for some time now from hysterical attacks, which last for about twenty minutes, and during which she becomes unconscious. The last attack came on during the singing in church, and she had to be carried out.

Uterus retroflexed. A pessary applied. Cure.

CASE VIII. *Slight Anteflexion of the Uterus; Attacks of Convulsions.*—Mrs. ——, æt. 33, had four children, the last born six years ago. Six months ago had a convulsive seizure, following a course of nursing and over-exertion. The convulsions produced a kind of opisthotonos. She was conscious throughout, but could not move for ten days. Since this attack has occasional twitchings. No sickness. Easily tires from short walks. Uterus a little anteflexed. Sound enters with difficulty. Treatment rest. Result favorable.

CASE IX. *Acutc Anteflexion of the Uterus; Suppression of Menstruation; Severe Hysterical Attacks.*—Miss ——, æt. 20. Has always been weak and delicate. Menstruation began at twelve.

Two years ago she bathed in the sea just before the time

for the period, and it did not occur. She became very ill, and menstruation did not occur for three months. Since that time she has been liable to severe hysterical attacks, and to frequent threatenings of attacks. There was a further catching of cold five months ago, and the menstruation has not occurred since, with one exception.

The uterus was found very low down in the pelvis and anteflexed. A cradle pessary was employed. The hysterical attacks ceased, but the patient remained for some time in a weak condition. Finally, restoration to health. The hysterical symptoms did not recur.

Case X. *Retroflexion of the Uterus; Hysteria.*—Miss ——, æt. 41. Had a fall from a horse twenty years ago, and has been ill ever since. Treated for hysteria for a long time. It was discovered, nine months ago, to be a case of retroflexion, by Mr. Palmer, of Nayland, Colchester, who has nearly succeeded in restoring the uterus to its proper place, and she is now much better.

Case XI. *Acute Anteflexion of the Uterus; Severe Hystero-epileptiform Attacks.*—Mrs. ——, æt. 21. Married three years. Ill since six months after marriage. Is subject to severe hystero-epileptic attacks. These chiefly occur after sitting upright, as at meals. They are very severe, and the general disturbance is very acute.

The uterus is in a state of acute anteflexion and much tilted forward. There is very great tenderness of the epigastrium and of the back, particularly at three special spots.

The flexion and displacement were treated by the sound and a cradle pessary. The attacks were relieved at once, and have not returned since.

Case XII. *Acute Anteflexion of the Uterus; Severe Convulsive Attacks.*—Miss ——, æt. 38. Out of health one year. Had an attack of bronchitis, on recovering from which she had a succession of severe nervous attacks, on one occasion being for five or six hours unable to speak, or to move the body or limbs, but was all the time conscious. There were many other severe attacks. For three or four months could not sit up one hour, though she could walk a little. Has not improved the last three months. To quote the patient's own description: "There is constant pain in the back, almost constant sickness or nausea, occasional violent retching brought on by walking or even talking. Any exertion of mind or body produces clenching of the hands

and a horrid feeling all over the back and back of the head. Menstruation regular, but extremely painful, and inability to move at these times increased. Feels very often faint, and a sensation then begins in the brain. She feels that she cannot speak, and is very unlike herself. On recovering she feels as if she had been some one else all the time, or as if she had two selves, one quiet and sane, the other idiotic."

Severe anteflexion of the uterus. Treated by a cradle pessary. Complete cure.

CASE XIII. *Acute Anteflexion of the Uterus; Severe Convulsive Attacks just previous to Menstrual Periods.*—Miss ——, æt. 28. Has suffered from severe convulsive attacks since menstruation commenced. These attacks appear generally just previous to menstruation. They have been considered due to disease of the brain.

The attacks are of the following kind: The eyes become fixed on the ceiling, the teeth clenched, the back arched and rigid, the limbs also contracted and set. There is incapability of speaking, but the patient knows what is going on. The skin is deadly cold. The attacks last from an hour to an hour and a half. The patient was found to be suffering from acute anteflexion of the uterus. She was treated for this by a cradle pessary and occasional use of the sound. After three months the attacks had become greatly lessened in frequency. Half a year elapsed before the patient was next seen. The attacks had disappeared. A slight sensation of faintness only was occasionally observed at times. A year later still free from attacks. The anteflexion of the uterus was difficult to cure in this case, but the final result was satisfactory.

CASE XIV. *Retroversion and Slight Flexion of the Uterus; Convulsive Attacks about Menstrual Periods.*—Miss ——, æt. 29. Four years ago began to suffer from convulsive attacks, which always came on about the second day of the menstrual period. She remains insensible about half an hour (once for two days) after the attack. Has had five attacks. Has had much exertion in lifting and nursing. Uterus markedly retroverted and a little flexed. Treated by pessary. Cure.

CASE XV. *Acute Retroflexion of the Uterus; Severe Hysterical Attacks.*—Mrs. ——, æt. 38. Has had no children. About one year ago began to have severe hysterical attacks, with screaming and much excitement. Occasionally every word excites the sensation of an attack coming on. For-

merly could walk well. Walking power now very much more limited.

Uterus acutely retroflexed, extremely sensitive to the touch. Treated by the sound and by a Hodge pessary. One year afterward she stated that she had had no more attacks, and was in all respects feeling quite well and strong.

Case XVI. *Uterus Anteverted; Hysterical Attacks.*—Mrs. ——, æt. 30. Four children. Hysterical attacks and pain after exertion. Uterus anteverted, wearing a Hodge pessary, the over-action of which has produced anteversion of the uterus, or exaggerated it.

Case XVII. *Anteflexion of the Uterus; Hysterical Attacks.*—Mrs. ——, æt. 24. Three children. Two years ago began to have hysterical attacks, with pains in the head, and dulness. Since last confinement, five months ago, the attacks are more frequent. The patient has a frequent choking sensation. She is obliged to stand a good deal.

Uterus low down, anteflexed; fundus close to symphysis pubis.

Treated by a cradle pessary. Cure.

Case XVIII. *Anteflexion of the Uterus; Hysterical Attacks and Severe Nausea.*—Miss ——, æt. 33. Five years ago lifted a heavy weight, and fell ill in consequence. Two years ago began to suffer from nausea. The sickness has been almost incessant ever since. Dysmenorrhœa also of late. For the last four months has been subject to fits of insensibility. The head feels strange; she lies down and knows no more for some time—once for as long as twenty-four hours. When she returns to herself has much aching of the jaws. Uterus very low down, large and anteflexed. There is great tenderness over right ovarian region. Very severe and troublesome nausea almost constantly present. Treated by a cradle pessary. Great improvement, sickness subsided, attacks ceased. Pessary removed one year and nine months later, when patient seemed well. Five months later return of symptoms and re-employment of cradle pessary.*

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* The following case, related by Boivin and Duges (translation by Heming, p. 109), very probably deserves to be classified with those in the above series:

"*Anteflexion Supposed to be Congenital.*—M. A. B., æt. 18, of small stature, died after repeated attacks of epilepsy. Ex. slight inflammation of intestines. The uterus was so bent toward its middle, that the posterior surface of its body appeared in front resting upon the neck

The cases above related, coupled with others which I have seen, but of which I possess no sufficiently good records, have induced me very decidedly to come to the conclusion that it is the uterus which is the seat of the irritation, which issues in the hysterical attack. The manner in which the attacks originated, the circumstances attending the subsequent occurrence of them, the relief, and in many cases the instantaneous manner in which the attacks ceased when the uterus was straightened and put into its proper position in the pelvis,—these facts and observations, repeated over and over again, have forced this conclusion upon me.

The occurrence of hysterical paroxysms was, in the large majority of cases which I have witnessed and investigated, apparently brought on by some physical exertion. This is a most important circumstance. The importance of it arises from the following considerations: When the uterus is in a state of flexion, either forward or backward, the act of lifting, or stooping, or over-walking, or standing, has the effect of intensifying the flexion; the uterus is pushed lower in the pelvis, and its curvature becomes exaggerated. This is a fact abundantly borne out by clinical observation. The result of increase of the flexion of the uterus is to increase the congestion; there is in such cases congestion to begin with, but the physical exertion leads to its very considerable aggravation, and when the aggravation reaches a certain point the hysterical attack appears.

On the other hand, by taking measures such as are adapted to prevent the aggravation of an existing flexion—that is to say, by keeping the patient in a horizontal position—the attacks are not found to occur, or, at all events, become much diminished.

Observation shows that the dorsal position prevents hysterical attacks due to anteflexion, but that the prone position is most effective when the case is one of retroflexion. These facts are most interesting. Out of the eighteen cases related, twelve were cases of anteflexion, from which it appears that the most common cause of

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of the bladder, and the fundus uteri was turned toward the anterior paries of the vagina, although the os uteri had retained its natural situation and form. If brought into its natural position it immediately returned to the former one. Tissue on section blackish and very dense. Cervix livid gray. Interior of cavity dusky black. Length on convex surface two and a half inches; on anterior surface fourteen lines."

hysterical attacks is anteflexion of the uterus. One of the principal reasons why the mechanism of the production of the hysterical paroxysm has so long escaped recognition is, I believe, the fact that anteflexion of the uterus has, up to quite a recent period, been hardly allowed a place in nosology. I cannot stop here to explain this latter circumstance; but I take the opportunity of saying that, having for many years closely observed and investigated the mechanical diseases of the uterus, I have long been impressed with the grave nature and frequency of the symptoms to which this variety of distortion and displacement of the uterus is capable of giving rise.

I may be permitted, in conclusion, to make a few remarks on the ovarian theory as to the origin of the attacks, which has of late been so warmly advocated by Professor Charcot.

It is well known to gynæcologists that the ovary is sometimes found to be prolapsed, and can be readily felt in the Douglas pouch. It is there subjected to great pressure and irritation, and much pain and suffering is found in such cases. These cases would therefore be supposed to be of all others those in which hysterical attacks should occur, supposing that the ovaries are the principal point of origin. I do not deny that such dislocation of the ovary may cause hysterical attacks; but I have, at all events, not seen attacks of hysteria in such cases of dislocated ovary, unless accompanied also by acute retroflexion of the uterus. Retroflexion and dislocation of the ovary are not seldom associated.

Further, in the cases of hysteria above related, where flexion of the uterus was undoubtedly present, the ovaries were not found to be particularly sensitive, nor was there evidence of ovarian disease.

The fact that pain is frequently felt in the ovarian region in cases of hysteria, on which much stress has been laid by those who adopt the ovarian theory, is explained by the flexion of the uterus. Having made many observations on this subject, I am able to state that pain in the ovarian region is a very common symptom in cases of uterine flexion. It appears to be due to the fact that the flexion is generally a little to one side, the uterus not being usually bent directly backward or forward, but most usually a little to one side or the other.

Two series of facts described by Professor Charcot are adduced by him to support the theory that the ovary is

the *point de départ* of the paroxysm in hysteria and hystero-epilepsy.

In the first place, Charcot states that pressure over the lateral hypogastric region has the following effect: "Pressure there produces not only pain, but a sensation accompanied by all or some of the phenomena of the aura hysterica. Thus, methodical compression of the ovary determines the production of the aura, or sometimes even a perfect hysterical seizure."

In the next place, Charcot states that a more energetic compression is capable of stopping the development of the attack when beginning, or even of cutting it short when the evolution of the convulsive accidents is more or less advanced.

The method adopted by Professor Charcot to effect the more severe compression is as follows:

"The patient should be horizontal in dorsal decubitus on the floor, or a mattress. The physician then, kneeling on one knee, presses the closed hand, or fist, into that iliac fossa which he had previously learned to regard as the habitual seat of the ovarian pain. At first much force is required to overcome the abdominal muscles. Pressure then produces numerous and noisy attempts to swallow. Consciousness returns almost at the same time. Now the woman moans and weeps, says she feels relief, or that you are hurting her. By continuing the pressure two, three, or four minutes, you are almost certain to find all the phenomena of the seizure to disappear as if by magic. When the abdominal resistance is overcome, pressure by the two first fingers is sufficient." *

It may be desirable to consider how far the results of Professor Charcot obtained by pressure, as above described, over the ovarian region, are antagonistic, or the reverse, to the uterine theory above formulated, as to the cause of the paroxysm in hysteria and hystero-epilepsy.

The pressure employed by Professor Charcot is a very forcible pressure made in the hypogastric lateral region, calculated, first of all, to abolish the resistance of the abdominal muscles—a resistance considerable in many cases; and, secondly, to produce a real compressing influence on the organs which lie in the pelvis. The incidence of this pressure, which is effected by the fist, or by an apparatus

* See New Syd. Soc. Trans. of Charcot's "Lectures," p. 27.

specially contrived for the purpose, is rather widely spread, and it is such that it must almost of necessity affect not only the ovary, but first the uterus, and secondly the ovary. Doubtless when the resistance of the abdominal muscles is overcome, the pressure can be more particularly pointed on, or directed toward, the ovary, or concentrated on this latter organ. But at the same time it is almost inevitable that the uterus should be greatly affected by this pressure, and must receive a considerable portion of it. Considering for a moment the operation of such pressure on the uterus, the effect might be different, according to the position of the uterus at the time. Thus, if the uterus were much anteverted, the result would, or might, be to push it still lower in the pelvis, and to increase the anteversion; but the action of the pressure would be further to express the blood from the uterine vessels, and to diminish any congestion of the organ existing at the time. If the pressure were made directly behind the pubic bone, the effect might, on the other hand, be such as to push the uterus backward, and, in the next place, to drive the blood out of its tissues. A further effect of the pressure would be, in any case, to diminish the flow of blood to both uterus and ovaries alike, by the general action of the compressing power on the blood-vessels of the pelvic organs.

So far as I am able to judge, therefore, it would appear that the operation termed ovarian compression is really entitled to be denominated "uterine," quite as much, perhaps even more, than it is to be described as ovarian compression.

But this is not all. Professor Charcot states that slight pressure of the kind above described often brings on pain and symptoms of the historical aura—that is to say, the attack is capable of being brought on by slight pressure and relieved by severe pressure. All this is quite in unison with the argument which I just advanced, for supposing a version or flexion to exist, the slight pressure above the pubes, such as Charcot describes, would undoubtedly at first intensify the displacement. The slight pressure would temporarily thus so act on the uterus as to induce the attack.

In conclusion, I would express my conviction that the escape from the indefiniteness of view, which up to the present time has characterized the various opinions entertained as to the nature of "hysteria," is to be found in the

frank adoption of the term "hysterical" in its most literal sense; and that in the future the uterus will be held to be in the main responsible for those various manifestations and disorders denominated "hysterical."

General Conclusions as to the Interpretation of Hysterical Phenomena.—The cases which have been described in the previous pages offer evidence as to the operation of certain conditions of the uterus as exciting causes of the attacks in which convulsive phenomena are witnessed. And it is reasonable to suppose that in the slighter forms of hysterical disorder the influence at work is of an analogous nature.

It is extremely probable that the predisposing condition is always a state of defective nutrition of the nerve centres, for the individuals affected for the most part present other strong evidence of general feebleness, weakness, and want of power. Moreover, there is usually a history of previous inappetency, and such quantitative defects in the dietary as would be likely to give rise to a starved condition of the frame generally. Together with this weak condition of the nervous centres there is often a feeble condition of the uterus (see chapter on Undue Softness of the Uterus).

As to the mechanism of the milder manifestations it may be reasonably assumed that when they result from mere emotional excitement the affection is primary; probably an unduly weak and irritable state of the nerve centres. But when the manifestations occur as the result of over-exertion, it is more probable *à priori* that they are the result of a reflex action. This reflex action takes its departure, according to the results of my experience, most frequently in the uterus. How this occurs may be explained as follows:

When the uterus is physically weak, its tissues are often found to be soft and unduly pliable, and under such circumstances a slight physical exertion is capable of producing an alteration in its shape. This alteration of shape is attended with compression of the nerves of the uterus. This compression of the uterine nerves is capable of exciting reflex manifestations.

Thus, in a weakly woman, lifting a weight, standing too long, or any kind of exertion capable of putting a physical strain on the too pliable uterus, may excite hysterical manifestations. In point of fact it can be shown that the more severe hysterical manifestations due to a reflex mechanism

are usually associated with an habitually flexed state of the uterus. We are now, however, speaking of the cases which are of a more simple character; but careful inquiry into the facts of cases will show that the above explanation is at all events compatible with those facts.

The presence of an "hysterical" tendency means, according to the explanations above given, that the individual is physically weak, but not necessarily fanciful. These physically weak individuals are also liable to suffer from various pains and inconveniences referable to the uterus; and it has come to pass that in very many instances these other sufferings have been regarded as imaginary or fanciful *because* they are observed in "hysterical" patients. But with the foregoing explanation, the reason for the association is obvious enough. In point of fact these sufferings, which are so frequently thought to be fanciful, are real, and their meaning is that the uterus is in a state of irritation and that the basis of this suffering is a physically weak condition of that organ.

Dr. Gowers's remarks on the "ovarian compression" so largely practiced in Paris are interesting. Ovarian compression "fails to produce a marked effect in patients in this country, although ovarian tenderness is by no means uncommon. In such patients evident distress, choking sensations, and even the feeling by which attacks are heralded, may be produced by compression of the tender ovary, but I have never known such pressure to produce an actual attack."

Regarding the connection between disorders of the sexual organs and convulsive attacks, Dr. Gowers makes the following remarks: "Retarded or absent menstruation coincided with the first fits in a large number of the cases which commenced in girls between fourteen and seventeen, but the difficulty in determining the exact causal relationship between the two conditions is very great. Epilepsy once set up in such cases, the subsequent establishment of regular menstruation appears to exercise very little influence upon the fits" (p. 31).

And later on, speaking of the treatment, the same writer says: "Recorded cases, in which the attacks have ceased when a uterine displacement was rectified, have not been paralleled by any facts which have come under my personal observation" (p. 300).

Respecting the truth of the theory now put forward con-

firmatory evidence is by no means wanting. Niemeyer, whose facts are generally considered as reliable, and who was certainly not disposed to attach an undue importance to these special uterine disorders, says that flexions more than any other of the disorders of the uterus give rise to hysteria. This is an exceedingly valuable statement coming as it does from a distinguished modern pathologist. It is, in fact, a piece of evidence from the opposite camp, so to speak, and is important as bearing out my view of the case. The further arguments I submit are as follows: In the first place, there is the *à priori* argument. It is reasonable to suppose that compression of the uterine tissues, involving as it must do compression of the nervous filaments, may produce such irritation as to give rise to convulsions. It does not, however, at all follow that such compression will always produce convulsions. It would be as reasonable to find fault with the theory that convulsions are sometimes due to the presence of worms in the intestinal canal, because these entozoa do not invariably give rise to convulsions. No one, however, doubts the connection between these two events. It is therefore not a sufficient reply to this statement to say, that if this theory were true, convulsions would always occur when compression of the uterine tissues is produced. The clinical arguments in favor of this view seem to me to be overwhelming. I have seen a considerable number of cases in the course of the past few years where convulsions of the kind described have actually ceased when the flexed uterus was so treated as to diminish or remove the compression existing at the seat of the flexion. And in all such cases I have observed that this kind of treatment produced a very marked effect even when it did not succeed in at once removing the attacks. This is an important argument. Another is, that the position of the body, or any exertion which has a tendency to aggravate the flexion, invariably aggravates and intensifies the convulsions. I could relate many instances where this interesting fact was observed. Thus, in one case of severe retroflexion, giving rise to convulsions, the attacks instantly ceased when the patient was made to lie on her face, this improvement being in that case effected without any other mechanical treatment of the uterus whatever. In another case, that of the wife of an Indian officer, in whom the convulsive attacks were produced by anteflexion of the uterus, they invariably occurred when the patient was sit-

ting upright at the dinner table, that being the only time of the day when they did occur. The sitting position increased the anteflexion, and thus gave rise to the convulsions. A further argument is the effect of measures having a more direct curative action upon the flexion, and which have been employed with the idea of restoring the uterus to its proper shape. I mean the employment of the sound and the use of pessaries in order to restore the uterus to its true natural shape. I now state that the effect of these measures has been, clinically, to give proofs, over and over again, of the validity of the position which has been taken up, inasmuch as the convulsions, or the tendency to convulsions, have always been influenced favorably in direct proportion to the degree in which the flexion has been favorably acted upon. Another argument which I have to submit is the result of very careful exploration of the uterus in many of these cases, an exploration made by the finger and the sound. It will be found in these cases that the introduction of the sound, if properly managed, gives no pain to the patient until it reaches the situation where the flexion exists. When the sound has been introduced a distance of one inch into the cervical canal its point comes in contact with that part of the uterine wall which is the seat of the compression; and invariably it is found, under these circumstances, that the patient experiences very great pain when that part is touched by the point of the sound. After the point has passed through this strait, and when passed beyond the site of the flexion there is no more pain felt by the patient. But the mere touch of the point of the sound on the uterus in this situation always gives rise to extreme pain and extreme sensitiveness. It requires that the examination should be conducted with great care in order to give this result, because it generally happens in these cases that the uterus as a whole is also sensitive to the touch. But by carefully conducting the examination it is practicable to define those parts which are so very sensitive to the touch.

TREATMENT.

The indications for the treatment of hysteria are twofold: *First*, to remove or ameliorate the susceptibility of the patient to impressions from without or from within, and, *secondly*, to remove the exciting cause, whatever that may be.

On the subject of the *general treatment* much has been already said in former pages as to the effects of a systematic attention to the nourishment and feeding of patients whose general condition is one of feebleness and impaired nutritional activity. The very great success which has attended the treatment of hysterical cases by what is now known as the "Weir Mitchell system" has been described, and its *rationale* particularized in a former chapter (see page 132, vol. i.). The systematic feeding associated with baths, massage, electricity, etc., has been attended with the best effects in producing a change from excessive feebleness to a condition of vigor and general nutritional activity, and there can be no doubt that the treatment in question is based on sound physiological and therapeutical principles. The so-called "hysterical" subject is frequently simply "weak," and will be improved by all measures having an invigorating tendency.

As preventive measures, fresh air, moderate exercise, nutritious food, occupation and exercise of the mind in some useful pursuit, are undoubtedly to be recommended. In regard to bodily exercise, caution is necessary, for much mischief may result from over-exertion in a weakly subject. The emotional faculties should remain in abeyance so far as practicable.

Marriage is on the whole to be recommended, but marriage is liable to increase the malady unless pregnancy occurs. My experience is that the condition of the uterus which produces hysteria is often the cause of sterility after marriage.

If the hysteria has nothing to do with the uterus and no uterine lesion is discoverable, general treatment only will be applicable.

But when the uterus is affected with a decided alteration of shape, general treatment, though not without its advantages, will very frequently be quite powerless in removing the liability to the disease. The means of remedying these alterations in the shape of the uterus which have been already described (see Treatment of Flexions) must then be put into requisition. The shape of the uterus must be restored, and the organ maintained in a state of rest. The treatment has yet to be tested by other observers, but what I have seen of it in my own practice enables me to affirm that when it is made impossible by mechanical or other treatment for the uterus to become further bent (a

previous rectification of its shape having been properly carried out), the symptoms do not recur.

Palliative Measures.—Distressing symptoms presented by hysterical patients, and for which relief is most urgently sought, are, flatulence, headache, and pain in the side. The flatulence is best treated by cordials; ginger, sal-volatile, and ether may be given for this purpose in combination. Relief in this way is of course only temporary, and the dyspepsia, on which the flatulence depends, must be treated by suitable measures. An assafœtida injection has been found to afford temporary relief in some cases. Opiate liniments are often useful; counter-irritation of the whole surface of the skin by flesh-brushes is very serviceable in the general treatment of hysterical patients.

In reference to headache, the same remarks as to the necessity for general treatment hold good. I have found both opiate and chloroform liniments of great service. Bark, in the form of the "liquor cinchonæ," is a valuable remedy in many cases where there is severe headache associated with anæmia. Cannabis indica, ether, valerian, and other antispasmodics, are often also necessary in these cases.

Paroxysms of hysterical convulsions must be guarded against by preventing the ordinary exciting cause, whatever that may be. For the relief of the paroxysm itself, a variety of methods have been recommended. Dashing of cold water in the face is one of the most efficacious, though, for a variety of reasons, it cannot always be adopted. Chloroform inhalation is very effective. Application of burnt feathers or other strongly smelling substances to the nostrils is often efficacious. Valerian, castoreum, assafœtida, ether, musk, camphor, are the drugs most commonly had recourse to, either in cases where the paroxysm is imminent, or, when it has ceased, with the view of preventing its recurrence. These remedies may be given singly, or two or more may be combined. Injections of cold water into the stomach were found very efficacious in arresting the paroxysm by Cruveilhier, and also by Dr. Ashwell. Injection of iced water into the rectum has been also recommended. Dr. Hare has introduced the plan of arresting the paroxysm by temporary suffocation of the patient. Pressure in the inguinal regions (ovarian compression), practiced by Negrier, and more recently by Charcot, is a procedure which has been already discussed (see p. 157).

CHAPTER XXXIX.

HYSTERO-NEUROSES (*continued*)—MENTAL DISORDER DUE TO REFLEX UTERINE IRRITATION—CEPHALALGIA.

Mental Disturbances sometimes produced by Uterine Irritation—Illustrative Cases.
CEPHALALGIA.—Occasional Severe Headache due to Disorders of the Uterus.

Experience has shown that irritation starting from the uterus is capable of exciting disturbances in the mental condition of the patient. The irritation acts in a reflex manner upon the cerebrum, and gives rise to marked mental disorder in certain cases.

Dr. Engelmann,* in his essay on the hystero-neuroses, describes cases of this kind. He selects three—one of a series of cases related by Meyer: 1. A case of melancholia, with anteversion, uterine congestion, and erosions. 2. A case of hypochondria, delusions, masturbation, anteversion, chronic metritis. 3. Melancholic depression, with delusions, in a patient of 21, during her second childbed. [This last case, however, hardly belongs to the category now under consideration.] Engelmann selects certain of Dr. Fordyce Barker's cases: viz., two cases of insanity, the result of menorrhagia. Engelmann has observed "displacement of the uterus, but not as a cause of insanity," and reposition of the extremely retroverted and large organ was followed by immediate disappearance of the mental disturbance and very remarkable relief.

Dr. Percy Boulton† has written on the same subject, and points out that reflex disorders of uterine origin frequently occur and are not recognized—*e.g.*, periodic headaches, neuralgia, depression of spirits, epilepsy, melancholia.

There are here two factors to be considered—the cerebrum and the uterus. The condition of the cerebrum is no doubt an abnormal one, or the uterine irritation would not have the effect of so readily disturbing its functions. That condition of the cerebrum is in all probability essentially one of debility. Speaking of the predisposing causes of

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* *Loc. cit.* † *Obst. Journ.*, No. 23, p. 697.

mental disease, Dr. James Adam* says it will very often be found that "exhaustion," in one or other of its many forms, lies at the root of the evil, and prepares the way for its onset—exhaustion induced by an infinite variety of means, but having as its climax impaired nutrition and exhaustion of the cerebral centre itself; which, being thus imperfectly nourished and exhausted, produces none of the ordinary ideas or modes of thinking incidental to health.

It is possible that reflex irritation on the side of the uterus producing mental disturbance occurs in the class of cases above described by Dr. Adam. The instances which have come under my notice have been observed where exhausting ideas or influences have been at work.

I subjoin particulars of some cases illustrative of the foregoing remarks, which have fallen under my own notice:

Case I. *Melancholia due to Anteversion of the Uterus.*—Mrs. ——, æt. 30. Married nine years. Had first two children, then a miscarriage; and after three years' interval, another child. Six weeks after birth of this last child, three and a half years ago, felt hysterical after breakfast, and was very weak and ill. Eight months afterward, a miscarriage. She got about and excited herself soon afterward, and became ill. An attack of rheumatism supervened. She had a sensation that "she must go out of her mind." This continued till next pregnancy. Her last child was born one and a quarter years ago. Since that occurrence, she has been liable to sudden attacks of a peculiar mental feeling. She has at these times a dread lest she should say wrong things. She has pain in the head for weeks together, feels excited and weak. She is suffering from anteversion of the uterus, which her medical attendant has detected, and he sends her to me, in order to ascertain if the uterine condition has anything to do with the head symptoms. On examination, decided anteflexion found to exist. Treated by a cradle pessary. Perfect cure of the head symptoms. Subsequent pregnancy, and delivery at full time.

Case II. *Melancholia; Menorrhagia; Retroflexion of the Uterus.*—Mrs. ——, æt. 30. Married five years. Has been under the care of a distinguished physician, Dr. Thomas, in New York. Has had two children; last nearly two years ago. After the first labor, the patient overwalked herself

* Report of Crichton Royal Institution, Dumfries, for 1880, p. 14.

and became ill; the periods being very profuse. One month after the second labor she felt that the nervous system was out of order: she heard noises in the head, could not work, or read, or write, or attend to affairs. Menstruation became very profuse; she was in constant dread of an "attack" of some kind. Has been wearing a retroflexion pessary since that time, and is now better.

CASE III. *Mental Excitement at Menstrual Epochs; Anteversion.*—Miss ——, æt. 34. Liable to attacks of mental excitement, which occur when menstruation is delayed or does not appear. The irregularity of menstruation, and the liability to mental excitement date from a period fifteen years ago; and the cause of the illness seems to have been a long ride on horseback. The uterus is soft, and anteflexed to a slight extent.

CASE IV. *Melancholia; Anteversion of the Uterus.*—Mrs. ——, æt. 37. Has had nine labors, six of which were premature. Suffers from a constant feeling of melancholy, distressing both to herself and to her friends. The uterus is large and anteflexed. Treated by a cradle pessary. Removal of the melancholia.

CASE V. *Mental Excitement; Extreme Exhaustion; Anteflexion of the Uterus.*—Mrs. ——, æt. 20. Has had two children. Suffered from great weakness, and inability to take food. Great mental excitement. Anteflexion of the uterus. The case was one of severe chronic starvation. Very great patience and care were required in this case, but a complete cure from a very alarming condition was finally obtained.

CASE VI. *Mental Disturbance; Retroflexion of the Uterus.*—Miss ——, æt. 29. Was unable to walk well between the ages of 13 and 18. Had to lift weights and exert herself a good deal. Suffers from low spirits and depression, and has periods of exacerbation of this feeling, during which she writes letters of an abusive character to her relations. The uterus is in a state of acute retroflexion, and the history shows that the displacement has existed for some years. She is now able to walk easily. A complete cure of all the symptoms followed; treatment by means of a Hodge pessary.

CASE VII. *Derangement of Thoughts; Retroflexion of the Uterus.*—Mrs. ——, æt. 42. Has had one child. Has pain in walking, and "her thoughts get deranged" by walking; so much so that it is a serious trouble to her. Uterus retroflexed, low down, rather small in size.

CASE VIII. *Melancholia; Anteflexion of the Uterus.*—Miss ——, æt. 38. For last year or more felt very low and desponding, and as if she should go out of her mind. The head is painful. Five years ago, had for a considerable time much exertion. Uterus low down, anteflexed.

CASE IX. *Great Mental Depression; Exhaustion; Anteversion of the Uterus.*—Mrs. ——, æt. 35. Two children. Suffered great fatigue some months ago, nursing a sick child. Since that time very ill. Extreme depression of spirits, worse in the evening. Walking gives great pain in the back. Uterus soft, swollen, much anteflexed. Considerable relief followed treatment, but the soft condition of the uterus was only remedied after a considerable interval of time.

CEPHALALGIA RESULTING FROM UTERINE IRRITATION.

Very intense cephalalgia is occasionally observed in connection with long-standing flexion of the uterus. This symptom is not very common, at all events in this degree of intensity; but the circumstances of certain cases which have come under my notice were such as to show in a very positive manner that the connection between the symptom in question and the cause assigned was really one of cause and effect.

The cephalalgia may be so intense that the sufferer is sometimes confined to a darkened room for days together, unable to bear light, and hardly tolerating being even spoken to. And I have known a case (one of chronic severe retroflexion) in which this state of things had reached such an extent that the patient hardly ever left her room at all.

Another case may be mentioned—that of a young lady who was liable to exceedingly severe cephalalgia, lasting sometimes three days at once. She was affected with anteflexion of the uterus, the uterus in a state of mal-nutrition, and very soft to the touch. She entirely lost the headache while under treatment for nearly two years by a uterine stem. The symptom returned after the removal of the stem, and after some months' trial by other measures it was found necessary to adopt the stem treatment a second time in order to give her relief.

Severe cephalalgia is sometimes observed in cases of fibroid tumor of the uterus, and I have seen cases in which the symptom in question was most distressing, and very intractable to treatment of any kind. But it does not ap-

pear that cephalalgia is more liable to occur where the fibroid tumor is of large size; on the contrary, in the cases where the symptom has been most intense the tumor was of inconsiderable magnitude.

CHAPTER XL.

PERI-UTERINE HÆMATOCELE.

Pathology of the Subject—Positions in which the Hæmorrhage occurs, and Symptoms attending its Occurrence—Intra-peritoneal, Extra-peritoneal, Causes of Peri-uterine Hæmatocele enumerated—Results.
DIAGNOSIS.
TREATMENT.—Means of arresting the Menorrhagia—Treatment of Pain, Collapse, etc.—Question of Puncture.

The terms "pelvic hæmatocele," "peri-uterine hæmatocele," "retro-uterine hæmatocele," "pelvic hæmatoma," have been used to designate an effusion of blood in the neighborhood of the uterus, giving rise to formation of a tumor. The occurrence of hæmorrhage in and amongst the pelvic viscera in women, although spoken of by several of the older authors, has only within the last thirty years received that amount of attention which its importance deserves. To Bernutz,* Nélaton, and Voisin of Paris, the profession is indebted for first indicating and explaining the nature, course, and symptoms of this affection. In this country, Dr. Tilt was the first to draw attention to the matter; Dr. West has written an admirable account of it in his work on "Diseases of Women;" Sir J. Y. Simpson described it, in his ordinary felicitous manner, in his "Clinical Lectures." The works of Voisin† and Bernutz,‡ an admirable essay on the subject by Dr. M'Clintock,§ the valuable observations of Dr. Madge,‖ Dr. Matthews Duncan,¶ and a very complete and exhaustive essay by Dr.

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* See "Arch. Gén. de Méd." 1848.

† "De l'Hématocèle rétro-utérine, et des Epanchements sanguins non-enkystés de la Cavité Péritonéale du Petit Bassin." Paris, 1860.

‡ "Clinique Médicale sur les Maladies des Femmes," vol. i. 1860. Translated by Dr. Meadows for New Syd. Soc. 1866–7.

§ "Clinical Memoirs on Diseases of Women." Dublin, 1863.

‖ "Obst. Trans.," vol. iii.

¶ *Edin. Med. Journ.* Nov., 1862.

Tuckwell,* comprising an analysis of ninety-eight published cases, may be referred to for information on this interesting subject. Dr. Savage, Dr. Barnes, Dr. Meadows, Dr. Pallen may be mentioned among those who have more recently published valuable observations thereon. The views at first entertained and expressed respecting this newly-discovered pathological condition were somewhat opposed to each other, and there is still difference of opinion as to the nature, seat, and mode of origin of the hæmorrhage, although the difference is really less than it has been represented to be.

Bernutz, whose claims to be considered as the first modern observer and expounder of this pathological condition stand before all others, rightly insisted on the mischief which has arisen from treating the effusion, clot, or tumor, as a sort of entity, and of the confusion which has arisen from speaking of pelvic hæmatocele or uterine hæmatocele as a disease *per se;* whereas it is really but a symptom, a consequence, an effect, or an accident, as the case may be, of exceedingly varying conditions. The term "hæmatocele" must be understood to be a convenient term, indicating simply effused blood; and if we use the double term "peri-uterine hæmatocele," which is on the whole a convenient one, it must be understood to imply effusion of blood in the neighborhood of the uterus. It will so be used in this place, and without restriction of any kind as to the precise seat of the effusion.

The circumstances leading to the pouring out of blood in the neighborhood of the uterus will be presently mentioned; but, in the first place, it will be advisable to point out the anatomical positions in which hæmorrhage is liable to occur.

INTRA-PERITONEAL HÆMORRHAGE.

Hæmorrhage may take place into the peritoneal cavity, the blood collecting in the pelvis, and lying on and between the pelvic viscera; and the blood may come from some vessel in the pelvis itself, or from a vessel situated in the abdominal cavity. The blood collects in the pelvic cavity, which it fills more or less completely, according to the quantity poured out. If the effusion proceed rapidly, it

* "On Effusions of Blood in the Neighborhood of the Uterus." Oxford, 1864.

may kill the patient before coagulation occurs. If the effusion take place slowly, the blood effused generally coagulates, and the coagulum becomes limited to a certain situation by inflammatory products, or by the free border of the coagulum only. In this case it is spoken of as encysted; but, under some circumstances, no such limitation of the blood occurs. It will be obvious that, when the blood has coagulated, the coagulum will form a tumor having certain physical characters, and which, if the coagulum be in the pelvic cavity, may be felt through the vaginal walls on digital examination. If the examination be made early, fluctuation may be perceivable, but it is often difficult to make out fluctuation satisfactorily, If the examination be made soon after the coagulation has occurred, the tumor will be soft and ill-defined, and the more so as it will be probably at this time surrounded by serum not yet absorbed. If the examination be made later, the tumor will be harder and more resistant. Later still, it will be found either to have become reduced in size, or to have undergone a softening process or liquefaction. The blood drawn off by operation has a syrupy consistence and a peculiar odor, compared by Dr. Matthews Duncan to that of faded and slightly decomposing flowers. It is obvious that the physical aspects of the tumor, as felt through the vaginal wall, will vary according to the amount of blood effused and the quickness with which this occurs. A large and sudden hæmorrhage would leave behind it a clot filling the whole pelvic cavity, dipping down behind and at the sides of the uterus, as far as the peritoneum extends. The uterus would in such a case be felt to be embedded in a mass of semi-solid substance. On the other hand, a small hæmorrhage would give rise to a coagulum, which might be felt only in one part of the pelvis—*e.g.*, behind the uterus, in the Douglas fossa ("retro-uterine hæmatocele"). The effect produced on the patient by hæmorrhage into the peritoneal cavity appears to vary very considerably. In one case—and this is perhaps the rule—it sets up violent inflammatory action; in another, the presence of the blood is better tolerated. The effect on the patient *quoad* the loss of blood necessarily varies according to the amount lost and the ability of the patient at that particular time to bear losses of blood of any kind. It is almost unnecessary to point out that when a large coagulum occupies the pelvic cavity it gives rise to the "pressure" signs observed in the

case of other pelvic tumors, such as difficult defæcation, difficult micturition, a sense of fulness, pains in the lower extremities, etc.

It may or may not be the case, as Dr. Barnes contends, that very slight hæmorrhages into the pelvic peritoneal cavity occur frequently, and are clinically unrecognized. When, however, the hæmorrhage is considerable, the symptoms produced are of a peculiar kind, most alarming, most intense in character. The symptoms are those of hæmorrhage and of peritonitis combined. Thus the patient becomes deadly faint, and at the same time complains of an agonizing pain in the lower part of the abdomen. The fainting is more or less continuous, but it is greatly more intense at intervals. And so with the pain, this being generally continuous, but liable to exacerbation to an extreme degree at times. It is characteristic of the attack that it begins suddenly, and most frequently it happens that the attack is coincident with a menstrual period. There may be, adopting Dr. M'Clintock's arrangement of the symptomatology, three modes of invasion: (1) The sudden and acute form; (2) A form less severe and overwhelming in its effects, life not being so evidently threatened; (3) A sort of chronic form, the symptoms being developed gradually or in succession.

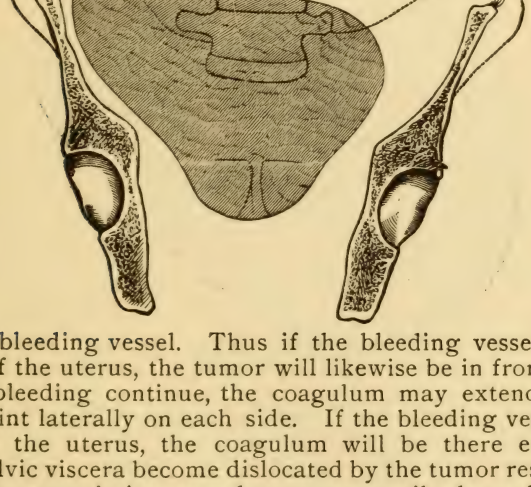
EXTRA-PERITONEAL PELVIC HÆMORRHAGE.

The term "thrombus" has for some time been used to designate a blood coagulum in the cellular tissue of the labia, or near the external outlet of the organs of generation; and the term is obviously quite as applicable to the coagulum, resulting from hæmorrhages taking place higher up—that is to say, in the cellular tissue near the uterus, in the broad ligaments, etc. Thrombus of the external generative organs has for a long time been well known, but it is not so with the thrombi of the internal generative organs. It is now known that an effusion of blood near the uterus in the situations above indicated is not uncommon. By some authors the effusion (or its coagulum) is spoken of as a "thrombus;" by others it is considered as a "peri-uterine hæmatocele." Thus Bernutz only admits intra-peritoneal hæmorrhages as causes of hæmatocele, and considers extra-peritoneal hæmorrhages as instances of thrombus. This author believes that the extra peritoneal form of hæmor-

rhage is comparatively rare. It is more convenient, however, to discard this word "thrombus," and to apply the term "peri-uterine hæmatocele" to hæmorrhages having this anatomical position. If the nosology of the subject were to be considered *de novo*, there would be much to be said in favor of a different nomenclature.

The seat of the extra-peritoneal hæmorrhage now under consideration is the connective tissue around the uterus and ovaries and pelvic viscera generally. The position and shape of the tumor resulting from coagulation of blood so effused necessarily varies according to the precise situation

FIG. 162.*

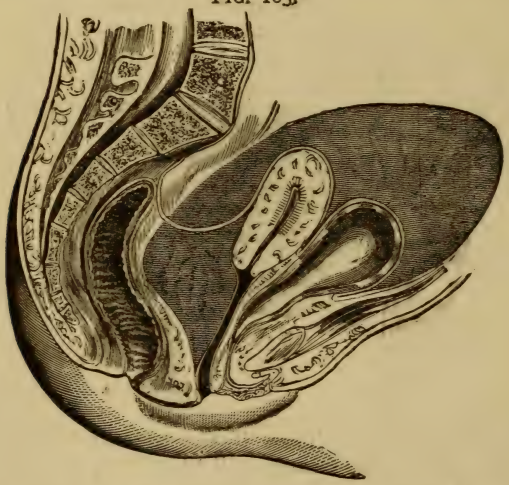


of the bleeding vessel. Thus if the bleeding vessel be in front of the uterus, the tumor will likewise be in front; and if the bleeding continue, the coagulum may extend from this point laterally on each side. If the bleeding vessel be behind the uterus, the coagulum will be there evident. The pelvic viscera become dislocated by the tumor resulting from the coagulation, to a degree necessarily dependent on the extent of the hæmorrhage. The tumor may extend from the pelvis high up into the abdomen. The physical character of the tumor, as regards hardness, softness, etc., is subject to variations of the same kind, as detailed in the case of extra-peritoneal hæmorrhage. In fact, so nearly do

* Fig. 162 gives an outline of the tumor in a case (P. H.) in University College Hospital, where the hæmorrhagic effusion was apparently extra-peritoneal.

the physical characters presented by the tumor in extra- and intra-peritoneal hæmorrhage agree, that it is hardly possible during life to distinguish them. The tumor in both cases may rise high above the pelvis into the abdomen; in the extra-peritoneal form it may be extremely large. The symptoms do not, as far as can be ascertained, differ in the two cases; and that this is true may be judged of by the fact that it is disputed whether in the majority of cases the hæmorrhage is intra- or extra-peritoneal. In the extra-peritoneal hæmatocele the tumor may reach lower down in the pelvis; an hæmatocele tumor found extending

FIG. 163.*



upward from the vulva into the pelvis would almost certainly be extra-peritoneal;† the reflexions of the peritoneum would prevent such a descent of the tumor in the intra-peritoneal form. With this exception, there appears to be

* Fig. 163 gives a lateral view of the position of the tumor in a case observed in University College Hospital. The effusion was of very considerable extent. The outline of the tumor is strictly correct, but it is not certain whether the blood was intra- or extra-peritoneal. It was diagnosticated at the time as extra-peritoneal.

† It is, however, important to recollect, as Dr. Phillips has pointed out, that the retro-uterine pouch descends very low in certain cases, so far, indeed, as to allow an effusion of blood within it to approach more closely than would have been supposed possible to the vulvar aperture. See "Obst. Trans.," vol. xiii., p. 179. Mr. Spencer Wills also considers

hardly anything in the physical characters of the tumors in the two cases to distinguish them. The changes which are observed in the coagulum formed do not materially differ, whether the hæmorrhage be intra- or extra-peritoneal. Absorption, softening, abscess—these are effects which may equally result. A tarry, syrupy condition of the contents is generally observed when the blood is not soon absorbed; the blood corpuscles become shrivelled and contorted, mixed up with pus cells, crystals, patches of pigment, etc. It not unfrequently happens that the tumor, at first small, becomes enlarged at the next menstrual period, from a recurrence of hæmorrhage. Meanwhile, inflammatory action goes on, and during the progress of the combined and simultaneous effusion and inflammation the tumor increases.

We may now pass on to the consideration of the

CAUSES OF PERI-UTERINE HÆMATOCELE.

Under this head will be included all cases in which an effusion of blood takes place in the neighborhood of the uterus so as to constitute a tumor perceivable through the vaginal walls, whether intra- or extra-peritoneal.

Rupture of some one of the Vessels in the Uterine or Ovarian Plexus.—It has been already (see Phenomena of Menstruation, p. 45) pointed out that the stratum of blood-vessels forming a thick network immediately external to the uterus undergo, under various circumstances, a kind of erection, in process of which they become greatly distended and enlarged, and that this erection occurs, in all probability, during menstruation, during intercourse, and under other circumstances. Lying beneath the ovary, in the folds of the broad ligament, there is also a rich plexus of vessels—the pampiniform plexus, together with a mass of tortuous vessels now known as the bulb of the ovary; all these vessels are also susceptible of great enlargement. The functional activity of the uterus and ovaries is thus connected with a considerable engorgement and distension of the plexuses of vessels now referred to. The tissues of the uterus and of the ovaries are doubtless congested at the same time; but it is evident that when blood is determined to the internal generative organs, the greater part of it

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that the retro-uterine pouch extends lower than has been generally supposed. The life-size drawings in this edition are altered, so as to represent this revised view of the subject.

goes to distend the very large and numerous vessels in the uterine and the pampiniform plexuses and the ovarian bulb respectively.

Dr. Savage * points out the particularly free communication which subsists between the perineal and pelvic venous systems, and that these veins are unprovided with valves. The plexus of veins around the uterus, the vaginal canal, the urethra, and the entrance of the vagina, enjoy free communication one with the other. Dr. Savage points out also the valuable obvious inferences derivable from these considerations, in reference to the etiology and progress of hæmatoceles at the pudendal region. The enormous hæmorrhage sometimes observed in cases of rupture of vaginal varices, etc., is thus intelligibly explained. The number and size of the veins constituting the plexuses of the female generative organs predispose to the occurrence of hæmatoceles.

The foregoing facts have a very important bearing on the present question; they afford us the means of explaining satisfactorily why it is that hæmorrhage is liable to occur in the connective tissue around the uterus, and in the folds of the broad ligament. The clinical facts amply bear out the conclusions deducible from physiological considerations. Rupture of some one of these vessels may be produced by violent or immoderate sexual intercourse, by undue bodily exertion of any kind during menstruation, and probably under other circumstances also. When a vessel has given way, the effusion of blood may be trifling or considerable, according to circumstances. In some cases, the first hæmorrhage is slight, but under reapplication of the exciting cause it recurs, and finally a tumor of considerable size is formed. The seat of the ruptured vessel determines the position of the tumor. When the uterine plexus is implicated, the hæmorrhage is probably almost always extra-peritoneal; but if the rupture affect a vessel in the pampiniform plexus or in the ovarian bulb, the hæmorrhage may readily occur into the peritoneal cavity, although more generally it probably occurs within the folds of the broad ligament, and is extra-peritoneal. The intra-peritoneal cases are most likely to prove fatal, apparently because there is less limit to the amount of hæmorrhage. A "varicose" condition of the vessels in the pampiniform plexus has been noted in some cases where rupture into the

* Plate IV., *loc. cit.*

peritoneal cavity has occurred; and it is rational to infer, in many cases, the existence of a chronic varicose condition of the uterine and ovarian plexus of veins.

It is my impression that, in by far the majority of cases, the source of the hæmorrhage giving rise to the tumors classed under the term "peri-uterine hæmatocele," is that which has been now indicated. On this point, however, there is difference of opinion. In most cases of peri-uterine hæmatocele, the patients recover, and the anatomical evidence is wanting. Dr. Matthews Duncan * has well argued the question from this point of view. His experience has convinced him that the extra-peritoneal form of hæmorrhage is probably a common form of the disease, the clinical facts which have come under his observation having been opposed to the conclusion that an intra-peritoneal seat of the effusion was possible in certain of the cases related. Dr. Duncan admits, in common with other recent authorities, that the effusion is intra-peritoneal in many cases. From Dr. Tuckwell's analysis of published cases it appears that the effusion was intra-peritoneal in thirty-eight out of forty-one cases, where a *post-mortem* examination was made; there can be little doubt, in fact, that in the fatal cases the effusion is far more frequently intra-peritoneal; but this does not of course imply an absolute numerical preponderancy for the intra-peritoneal cases.

Dr. Savage,† to whose careful and beautifully illustrated work on the female generative organs the profession is much indebted, observes: "Viewing the fixed relations of the pelvic peritoneum, which so far as is known are disturbed only through the slow disintegrating process attending the formation of matter, a subperitoneal hæmatoma of large size would appear an impossibility." But it appears to me that the facts known to us in relation to the rapidly occurring, very considerable infiltrations, which are witnessed in the first stage of certain cases of pelvic cellulitis, before there has been any change of a disintegrating character, sufficiently show that these pelvic peritoneal structures do not offer material obstruction to the occurrence of large effusions beneath them. The non-fatal tendency of extra-peritoneal hæmorrhages puts it out of our power to adduce *post-mortem* data, comparable in number to

* "On Uterine Hæmatocele."—*Ed. Med. Journ.*, Nov., 1862.
† *Op. cit.*, Plate vi.

the other class of cases when the hæmorrhage is undoubtedly intra-peritoneal.

Lastly, clinical facts show that a tumor originally seated in the broad ligament or elsewhere may burst into the peritoneum, and secondary hæmorrhage of very serious import may thus occur.

Apoplexy and Rupture of the Ovary.—Under this head may be included some few cases of peri-uterine hæmatocele. Collections of blood may be formed in the substance of the ovary, probably seated, as a rule, in an enlarged Graafian follicle, and constituting a sort of hæmatic cyst. This cyst may become ruptured, and blood extravasated into the peritoneal cavity. The formation of these hæmatic cysts in the first instance is involved in obscurity, but the explanation of their formation is probably the following: A Graafian follicle does not burst, as it should do, into the Fallopian tube; hæmorrhage takes place within it; it enlarges from continuance of the bleeding, and rupture occurs. I have occasionally found Graafian follicles pathologically increased in size, and containing very large clots. In certain blood diseases, hæmatic cysts of the ovary thus formed may probably attain a considerable size.

Hæmorrhage during Menstruation from the Graafian Follicle into the Peritoneal Cavity.—This class of cases is one of great interest. Normally, a certain amount of hæmorrhage—the "menstruation of the follicle," as Dr. Tyler Smith has termed it—occurs before the dehiscence takes place. The transfer of the ovule from the cavity of the follicle to the canal of the Fallopian tube is attended probably with discharge also of some of the blood from the follicle into the tube. After dehiscence has occurred we find a coagulum of blood in the ruptured Graafian follicle—a coagulum ordinarily the size of a nut. Now it is evident that a derangement or disturbance of this physiological process may give rise to hæmorrhage into the peritoneal cavity. If the tube be not accurately applied to the follicle, the blood and ovule together may escape into the abdominal cavity—when the ovule has been fecundated such an accident may result, as the occurrence of cases of extra-uterine pregnancy proves—and if blood continue to be poured out from the interior of the follicle, the blood must either distend the follicle itself or escape into the peritoneal cavity. We have no means of knowing what is the normal amount of secretion of blood from the interior of the follicle. It

has been ordinarily assumed that the quantity is trifling. There is, however, no proof of this; and indeed there are very good reasons for believing, with Gallard, that ordinarily a not inconsiderable portion of the menstrual discharge itself is derived from the follicle,* which latter, as is rendered probable from the researches of Rouget, remains closely grasped by the fimbriæ during the whole period of menstruation. If this latter opinion be correct, it will be evident that, if from any accident the normal path for the follicular hæmorrhage—that is, the Fallopian tube—be not available, intra-peritoneal hæmorrhage will result. If the condition of the blood be such as to favor hæmorrhage—as in fevers, anæmia, chlorosis, purpura, etc—the effects of such an accident are intensified.

The peri-uterine hæmatocele due to this case would be intra-peritoneal. The formation of an hæmatic ovarian cyst might precede the abdominal hæmorrhage.

Hæmorrhage from the Uterus and Fallopian Tubes into the Peritoneal Cavity.—When the menstrual product is prevented escaping by the normal outlet, by congenital absence of such outlet, or by acquired stricture or closure of the same, reflux of the blood may occur through the Fallopian tubes into the peritoneal cavity, and formation of a peri-uterine hæmatocele. This is a class of cases in illustration of which very considerable labor has been bestowed by Bernutz, in the work previously alluded to.

Whatever may lead to menstrual retention may end in pelvic hæmorrhage. In congenital cases of this kind the menstrual retention is associated with atresia of the cervix uteri, with absence of the vagina, or with imperforate hymen. In women who have menstruated, menstrual retention may occur from chronic inflammation of the cervix uteri closing the os uteri, or materially narrowing it; from traumatic influences during parturition, or otherwise; from cancer, etc. And there may be menstrual retention in cases where a slight menstrual discharge is apparently going on; the secretion of blood in the uterus may be so great that the os uteri is too small to allow of its escape. Hæmorrhage into the peritoneal cavity from the uterus and Fallopian tubes, one or both, may thus arise, either in connection with profuse menstruation or after parturition, or after

* See a memoir by Gallard, *Arch. Gén. de Méd.* Oct., Nov., and Dec., 1860.

abortion. [I have seen an immense intra-peritoneal hæmatocele produced by firmly tamponing the cervical canal to arrest a profuse metrorrhagia. The blood, unable to pass outward, regurgitated through the Fallopian tubes into the peritoneal cavity. The patient ultimately recovered.]

More commonly the peri-uterine hæmatocele originates at a menstrual period, the hæmorrhage being preceded by suppression or by profuse menstruation; it has almost always been noted that menstruation was previously irregular. There may or there may not be, concurrently with the internal hæmorrhage, an external one.

Rupture of the Fœtus containing Cyst in Extra-uterine Pregnancy.—The symptoms produced by the hæmorrhage which occurs under these circumstances are generally very severe. The blood is effused into the peritoneal cavity, often in great quantity.

The physical characters of the tumor produced by the effused blood resemble those observed in other cases. Frequently death occurs before the tumor has become developed and distinct. This rupture is most liable to occur when the fœtus is contained in the Fallopian tubes, and most frequently the accident happens between the second and fourth month under such circumstances.

Rupture of cyst of the broad ligament, as in a case recorded by Dr. M. A. Pallen.*

Rupture of the gravid uterus itself is one of the causes of intra-peritoneal hæmorrhage, though such an accident properly belongs to obstetrics. The blood found in the peritoneum would naturally collect in the retro-uterine pouch under such circumstances.

Rupture of Hæmorrhoidal Veins.—Sir J. Y. Simpson mentions a case † in which a considerable tumor situated between the vagina and rectum consisted of a coagulum—the result of hæmorrhage from one of the hæmorrhoidal vessels.

Hæmorrhage from Vessels of the Peritoneum ana Other Sources.—Bernutz ‡ describes a form of hæmatocele resulting from hæmorrhagic pelvi-peritonitis. Ferber,§ Virchow,

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* *Amer. Journ. of Obst.*, vol. ix., p. 69.
† "On Pelvic Hæmatoma."—*Med. Times and Gaz.*, vol. ii., 1859.
‡ *Op. cit.*
§ "Arch. f. Heilk." 1862, No. 5, p. 431.

Rockwitz, and Schroeder,* have, in reference to the general etiology of hæmatocele, drawn attention to the possibility of hæmorrhage occurring from the capillaries formed in the false membranes covering the pelvis viscera, the false membranes being the result of local inflammatory action. This hæmorrhage is analogous to that observed by Virchow in hæmatoma of the dura mater, in which case the blood is effused between successive layers of inflammatory membrane.

Here also may be mentioned the rare accident, *bursting of an aneurism* into the abdomen, the coagulum from which might be so situated as to give the physical characters of a peri-uterine hæmatocele.

Also, cases of the kind to which Dr. M'Clintock has drawn attention, and which, so far as at present known, are very rare, viz., the effusion of blood into the tissue of the uterus itself: the cervix uteri is the part affected. These cases occur only during, or immediately after, parturition.

Constitutional Causes of Peri-uterine Hæmatocele.—Any condition of the system at large favoring the production of hæmorrhage, may alone, or concurrently with some one of the causes already mentioned, give rise to peri-uterine hæmorrhage. Fevers, small-pox, etc., have in some recorded cases been associated with peri-uterine hæmatocele, the menstrual function becoming thus disturbed or disarranged in its performance. A watery condition of the blood, such as is present in anæmic individuals, chlorosis, purpura, or other blood disorders which may be considered as predisposing to the occurrence of hæmorrhage at a menstrual period, may, in the manner previously pointed out, be the cause of the peri-uterine hæmorrhage. Trousseau termed cases of this kind "cachectic" hæmatoceles.

Traumatic Causes.—It appears probable that in not a few cases peri-uterine hæmatocele is produced by actual laceration or stretching of vessels in the pelvis, the result of displacement of the uterus. That vessels do become lacerated is certain; that there are various diseases of the vessels in question which predispose to such rupture is well known. Although in some few cases the occurrence of the escape of the blood may occur without special exciting cause, it is yet the fact that in most cases unusual physical exertion of some kind has preceded the event, such exertion in fact as

* "New Syd. Soc. Year Book," 1869–70, p. 378.

would be likely to originate or intensify a displacement of the uterus. It is a clinical feature of such cases also that the accident is more liable to occur at the time of the menstrual period, or just before it or immediately after it.

Hæmatocele produced by Anteversion of the Uterus.—Not long since a case was under my observation in University College Hospital which suggested the above generalization. The patient was a cook having much standing and lifting to do. She became affected with peri-uterine hæmatocele. When the effusion had much diminished in size she was allowed to get up, but was again seized with pain, and it was then found that the uterus had become anteflexed, apparently as the result of the movement, and that there was a recurrence of the effusion of blood. After an interval of rest she was again allowed to get up, whereupon the same event as before was noticed, viz., pain, anteflexion, and further hæmorrhage. A pessary was applied before the patient was next allowed to get up, and there was no further hæmorrhage. In this case it seemed as if the stretching of the tissues at the posterior aspect of the uterus (where the effusion occurred), which resulted from the anteflexion, had given rise to laceration of vessels in that region, and that this was the explanation of the hæmorrhage.

RESULTS.

Absorption of the coagulum is the most common event, and this is the most favorable termination. In some cases the blood tumor bursts into adjacent viscera. The bowel is the outlet most commonly chosen, and the syrupy contents of the cavity then escape by stool, or flesh-like masses are passed in this manner from time to time, the tumor diminishing in size as this goes on. The tumor may burst into the vagina. It may burst also into the peritoneum, having been primarily either entirely extra-peritoneal, or else encysted in the peritoneal cavity. This latter termination is the most unfavorable, and it occurs more particularly in those cases where there is a recurrence of hæmorrhage.

DIAGNOSIS.

In cases of peri-uterine hæmatocele, a defined tumor, or a hardness, resistance, and dulness not well defined, may be found to extend upward a variable distance above the

brim of the pelvis. It may reach beyond the umbilicus. There is in such cases an effusion of blood, and this blood, at first fluid, afterward coagulated, forms the tumor. The history of such cases is peculiar: the formation of the swelling occurs quickly, is attended with alarming faintness and prostration, and with an assemblage of symptoms which have been already alluded to (see chapter on Menorrhagia). The physical characters of the tumor vary according to the stage at which the observation is made. Retention of urine, which may be produced by the condition in question, might possibly mask the true nature of the case; the distension of the bladder might, under such circumstances, disguise the other swelling.

One form of ovarian disease might be confounded with peri-uterine hæmatocele; thus, in one of an interesting series of cases, related by Dr. M'Clintock, the tumor due to the hæmatocele was for a time considered to be an ovarian tumor, into which hæmorrhage had occurred. The principal points to be borne in mind in the diagnosis of tumors suspected to be due to hæmatocele are, the sudden occurrence of the swelling, the previous occurrence of marked menstrual disturbance of some kind, and the peculiar feel communicated by the tumor. The preceding menstrual symptoms are the least constantly significative.

The vaginal examination is very important. A tumor can generally be felt through the vaginal walls, and constituted by blood, or masses of blood-coagulum in various stages of transformation, and of very various size.

The tumor so constituted has, as a rule, the following general characteristics: Its form is rounded, it is tolerably well defined, may be hard or soft, according to circumstances presently to be pointed out; usually limited to one side of the pelvis—the posterior and lateral aspects more particularly; in some cases the tumor is felt to surround the uterus on all sides. The vaginal wall is pressed downward, and its canal thus encroached upon, according to the size and relations of the tumor.

The physical examination of the tumor, as effected by vaginal digital examination, may, or may not, enable us to arrive at a diagnosis of its nature, but the physical examination, the symptoms presented by the patient, and the history of the case, taken together, usually render the formation of a diagnosis comparatively easy.

The history is of most assistance in a doubtful case. The

tumor most resembles that produced by pelvic cellulitis; from it it is distinguished by the suddenness of its occurrence, by the absence of that hot, puffy condition of the vagina characteristic of the induration stage of pelvic cellulitis, by the absence of constitutional fever, and by the absence of the thickened brawn-like condition of the vaginal wall. The tenderness may be pretty nearly equal in both. [In the early stages of pelvic cellulitis, the tumor is more localized, more indurated, more closely attached to the uterus and its appendages, more sensitive to touch, and the temperature is always elevated.] In some cases, the hæmorrhagic effusion undergoes after a time suppuration, and the physical characters may then be identical with those of pelvic abscess. It will thus be seen that the diagnosis of hæmatocele from abscess is at first easy, but that it may be more difficult, later. From fibroid tumor, peri-uterine hæmatocele is distinguished by its want of uniformity and comparative want of solidity. The diagnosis of (unruptured) extra-uterine pregnancy, from peri-uterine hæmatocele, may be difficult in some cases, especially when a hæmorrhagic discharge is present. In extra-uterine pregnancy the uterus is enlarged, but enlargement, or at all events elongation, of the uterus may also be observed in hæmatocele (Duncan). If the case were one of suspected extra-uterine pregnancy at about four months, the absence of the general symptoms of hæmatocele would be confirmatory of the suspicion. Retroversion of the gravid uterus has been confounded with peri-uterine hæmatocele; but a careful consideration of the case should prevent a repetition of such an error.

Ovarian tumors in ordinary cases could not be mistaken for hæmatocele unless the ovarian cyst were in a state of inflammation, and the previous existence of the ovarian tumor unknown.

In the majority of cases the occurrence of the symptoms at a catamenial period, their instantaneousness, and the simultaneous appearance of a tumor rather soft or fluctuating, and of tolerably defined character, pressing on the vaginal walls—these, taken together, indicate a hæmorrhage in the neighborhood of the uterus. In those cases of peri-uterine hæmatocele, however, where the development of the tumor is more insidious, there being an absence of marked symptoms at the time of the occurrence of the effusion, the diagnosis is more difficult. In these latent

cases the effusion is at first slight, and the tumor slowly increases in size.

In doubtful cases, the use of the fine aspirating trochar is of great service in aiding the diagnosis under such circumstances. When the tumor is posterior, and we wish to ascertain the presence of fluctuation, we may with advantage make a double simultaneous examination from the rectum and the vagina. The diagnosis of cases of rupture of the fœtus-containing cyst in extra-uterine pregnancy from cases of peri-uterine hæmatocele, is by no means easy. In cases of rupture of the tube in Fallopian pregnancy, the diagnosis frequently rests chiefly on this, that the woman is known to be, or suspects herself to have been, pregnant. The attention of the attendant is likely to be diverted from the idea of pregnancy by the losses of blood which appear to be very frequently present in extra-uterine pregnancy, and which are erroneously looked on as evidence of menstruation.

Lastly, it must be recollected that an hæmatocele becomes sometimes converted into an abscess: when this is the case a careful investigation of the history and physical signs alone will indicate the actual state of things present.

TREATMENT.

When death occurs, it takes place usually either from hæmorrhage and collapse, or from peritoneal inflammation; the indications are, to arrest the hæmorrhage, to prevent inflammation, and, in certain cases, to promote external evacuation of the exuded products.

First, as regards the hæmorrhage. If the arrest of hæmorrhage be the chief indication, which will be judged of by the intensely pallid and faint state of the patient, our object should be to promote coagulation of blood already effused, and to check the flow of blood to the pelvic organs. One of the most important elements in the treatment, then, should be the observance of absolute rest in the horizontal position, not only during the attack itself, but between and during the succeeding menstrual period. Application of cold by means of bladders containing ice, placed over the pubes and the lower part of the abdomen, is of essential service. As a further help, the injection of iced water into the rectum might be suggested. The administration of food and drink requires careful consideration. If the pa-

tient were previously anæmic, or if there were reason to believe that the hæmorrhage was produced or kept up by the watery or vitiated character of the circulating fluid, a more liberal diet would be necessary; but under other circumstances, and during the acute stage, food and drink should be moderate in amount. For the relief of the great prostration and collapse present in many cases, brandy or other stimulants should be liberally administered. Internal remedies—hæmostatics, as they are termed—are of assistance in checking the hæmorrhage under these circumstances; iron, ergot, sulphuric acid, are preferable.

In cases of intra-peritoneal hæmorrhage so excessive as to actually threaten dissolution—as in cases of rupture of the fœtus-containing cyst in extra-uterine pregnancy, it becomes a question whether surgical means should not be employed for the arrest of the bleeding—*e.g.*, the abdomen to be opened as in the operation of ovariotomy, and the bleeding portions secured. There is no question that this method of treatment is justifiable and even necessary in the cases above supposed, the only difficulty being in making an exact diagnosis of the condition present. This operation will no doubt be performed, and death from hæmorrhage averted, when the diagnosis of such cases is better understood.

["Fallopian pregnancies, terminating in death by hæmorrhage from bursting of the Fallopian tube, a few weeks after conception, are not uncommon. Almost every practioner of thirty years has seen such cases. One of the deputy-coroners of New York made necropsies in ten cases in five or six years. Four of my young friends died in this way. I saw one of them, with Dr. H. D. Nicoll, in New York, in 1874. The patient, aged 30, mother of two children, was taken suddenly at seven o'clock in the morning while dressing. Dr. Nicoll saw her in an hour. I saw her about 2 P.M. She was then in collapse. We had no doubt that she was dying of internal hæmorrhage. She died in twelve hours from the time of attack. The *post-mortem* examination showed the peritoneal cavity to be full of blood. If we had in time opened the abdominal cavity, it would have been easy to secure the bleeding Fallopian tube. But the golden moment for this had passed before we grasped the case in its entirety, and a valuable life was lost. With a sharp diagnosis, and prompt action, nothing would be easier, now, than to save life under these circumstances.

"The late Dr. Stephen Rogers of New York wrote an admirable monograph on Extra-uterine Fœtation, in 1867. He reviewed the subject in all its bearings, and said: 'To me, therefore, a correct diagnosis indicates as the first thing in order, the prevention of any further loss of blood; to accomplish which there is no choice of methods; *the peritoneal cavity must be opened; the bleeding vessels must be ligatured.*' Rogers's advice must become law for our future government."

The foregoing remarks are from a paper on gun-shot wounds of the abdomen read before the New York Academy of Medicine, October 6th, 1881, and published in the *British Medical Journal*, Dec., 1881, and January and February, 1882, by Dr. J. Marion Sims.]

The question as to the propriety of puncturing the tumor when such urgent symptoms are not present is one on which some difference of opinion exists; some practitioners advocating it, while others reject it, or limit it to those cases in which the effusion is not intra-peritoneal at all. As a rule, it is better to interfere surgically as little as possible, for, by making a puncture, there is fear of giving rise to inflammation of the interior of the sac, to purulent infection, and the fatal consequences of the same. Trousseau,* in an admirable clinical lecture on the subject, expressed himself as opposed to puncture. Professor Braun, of Vienna, states that in six cases where puncture and evacuation of the sac was performed, cure followed. In three cases he adopted a passive treatment, with like success.

Sir J. Y. Simpson recommended that an opening should be made, if the tumor be enlarging from inflammation or otherwise. Nélaton and Voisin limit surgical interference to cases where there is violent pain with increase in size, and threatened rupture into the peritoneal cavity.

The view taken of this question by Dr. Matthews Duncan is to the following effect: If the blood remain in form of clot, it is likely to be absorbed, and in such a case puncture is not required. When liquefaction occurs, Dr. Duncan believes that the blood becomes mixed with pus and is almost sure to be discharged, and in these cases operative interference may be required. The practitioner has then to determine whether he will leave the case to nature, or interfere; in some cases it is often good practice to open the

* *L'Union Méd.*, Dec., 1861.

sac, in others it is the only good practice. The operation is undertaken to avert a threatened rupture, or with the view of shortening and assuaging the sufferings of the patient. Dr. M'Clintock, who had had a considerable number of cases under his care, was opposed to the use of the trochar, unless urgent symptoms were manifested in consequence of the bulk or mechanical pressure of the tumor; and not even then, unless it were in the chronic stage.* Dr. Meadows argues in favor of operative interference in cases where the swelling is so great that the uterus is pushed against either sacrum or pubes, making both micturition and defæcation a matter of great difficulty, while the swelling rises considerably above the pelvic brim. He justifies his opinion by reference to the high mortality of Bernutz's cases. Dr. Barnes's views are more in accordance with those of Dr. Matthews Duncan. For my own part, in the cases, some twenty or twenty-five, of the more severe character, which have come under my notice, I have not once employed puncture, though in one case I was on the point of doing so. I have only met with one fatal case. It appears on the whole that a puncture carefully made, and so as to avoid risk of introduction of air, would in a severe case, shorten the duration of the malady, but, as a general rule, I am certainly decidedly opposed to puncture.

The difficulties of the operation are often not inconsiderable, and great care is required not to wound the bladder or other viscera. A sound should be passed into the bladder previously, in order to render evident the relation of this viscus to the tumor. In operating, the point which projects most into the vagina, and as nearly in the middle line as the nature of the case admits, should be chosen. The first opening made should be small, but when it is perfectly certain that the cavity is reached it should be enlarged. A large opening is necessary to allow of escape of clots. Care should be taken to prevent access of air to the cavity, and slight pressure should be afterward continuously applied over the abdomen. If pyæmic symptoms supervene, they must be treated by copious use of stimulants, by bark, ammonia, etc. Injection of the cyst with water is not to be recommended, unless the discharge has become putrescent.

With respect to those cases where the effusion extends high up into the abdomen, it may be a question whether to

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* *Op. cit.*, p. 271.

perform an abdominal operation or not. In a case related by Dr. Duncan paracentesis was performed, and the patient recovered. Such an operation is only admissible in exceptional cases, and where the tumor is very large.

Next, with reference to the peritonitis. The great pain in these cases is of itself an evil, and it must be treated by opium in sufficiently large doses. Poultices and warmth, so useful in ordinary peritonitis, would seem absolutely contra-indicated, inasmuch as the hæmorrhage would be probably increased by their use.

The subsequent management of the patient will require caution. Everything calculated to give rise to excitement or congestion of the genital organs must be avoided. The patient must be enjoined not to take excessive exercise, to live moderately, but well. The anæmic condition generally indicates the employment of tonics, of ferruginous preparations, etc., care being taken, while restoring the strength of the patient, to prevent premature exercise of this strength. Sexual intercourse could not with propriety be allowed until after the lapse of some months at least. A patient who has once been the subject of peri-uterine hæmatocele requires continuous and careful watching for a considerable period; exertion of any kind, however slight in degree, may induce recurrence of the mischief, if undertaken too early. I have witnessed one case, that of an hospital patient, who was the subject of the affection three times, at intervals tolerably widely separated.

CHAPTER XLI.

Pelvic Cellulitis, Pelvic Peritonitis, and Pelvic Abscess.

Peri-uterine Inflammation; its Frequency, Nature, and Seat—Progress and Route taken by the Effused Products—Symptoms and Effects of Pelvic Cellulitis.

Diagnosis.

Seat of Intra-pelvic Inflammatory Affections—Question of Intra- or Extra-peritoneal discussed—Anatomy of Douglas Pouch—Perimetritis and Pelvic Peritonitis.

Pelvic Cellulitis.—Course of Effusion, Resolution or Conversion into an Abscess—Causes—History.

Pelvic Abscess.

Pelvic Peritonitis.—Typical Severe Cases—Chronic Cases.

Treatment.—Great Necessity for Rest—Medicines—Diet—Evacuation of the Abscess.

The affections classed under the above headings are of great importance and interest. These affections, moreover, may be said to be peculiar to the female sex. They are not unfrequently masked or unrecognized until an advanced period of their progress, and the consequences are frequently in the highest sense of the word serious.

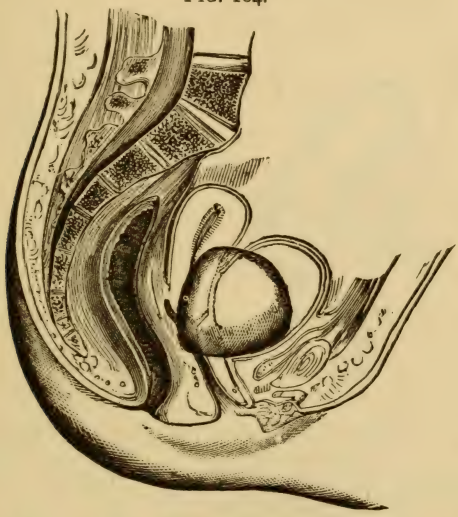
The affections here to be described are marked by occurrence of effusion of morbid products into the space surrounding the uterus and ovaries, and by the transformations undergone by these effused matters, one of which is the conversion of the products in question into a purulent or puriform fluid. Tumors of varying shapes and consistence are found in the progress of such cases, situated generally not far from the uterus and interposed between it and one side or other of the pelvic wall. These tumors appear rapidly, remain generally for a considerable time, and disappear either owing to gradual absorption of the material of which they are composed, or by liquefaction and bursting of the tumor at the surface of the skin, or into the peritoneal cavity, intestines, or bladder.

The effusions appear to be, frequently at all events, the result of the introduction of an irritant from without. They are frequently witnessed during the puerperal state, after delivery at term, or after miscarriages; may result from operations on the internal or external generative or-

gans, from the introduction of a tent into the uterine cervix, or from the performance of a severe operation such as ovariotomy, or from a simple operation such as the removal of condylomata from the labia. These affections can hardly be said to be idiopathic.

There has been at various times much discussion as to the comparative frequency of intra-peritoneal and extra-peritoneal pelvic effusion, and it is remarkable that observers as a rule class themselves very decidedly as partisans of an almost exclusive view, the smaller number of authorities being those who admit a more equal distribution of the cases under one or other of the two categories.

FIG. 164.*



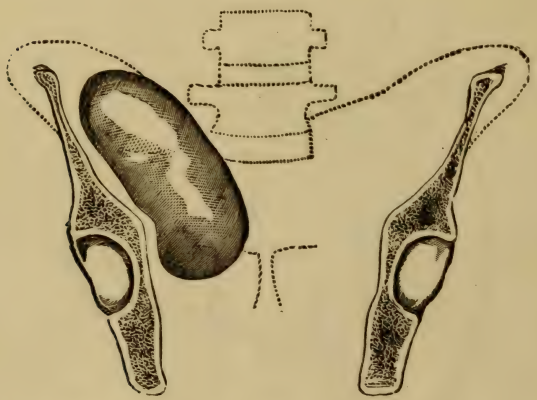
Thus, on the one hand, we have authorities who contend that in the large majority of cases where inflammatory effusions occur in the pelvis the peritoneum is its actual seat; "pelvic peritonitis" or "pelvi-peritonitis" being the designation employed.

On the other hand, by many the seat of the effusion is believed to be in the majority of instances the cellular or connective tissue outside the peritoneum.

* Fig. 164 shows outline of the effusion (to the right of the uterus) in a case in University College Hospital.

It might be supposed that it would be easy to determine the point in dispute by clinical observations, but in point of fact the determination is not easy. Very many of the cases recover and no *post-mortem* evidence is in such instances forthcoming; and it by no means follows that because *post-mortem* examination reveals the presence of pelvic peritonitis in some of the fatal cases, or even that it does so in the majority of cases when *post mortems* have been obtained, these results do not by any means necessarily prove that in the non-fatal cases, which constitute the actual majority, the seat of the effusion is also intra-peritoneal.

FIG. 165.*



One of the points bearing on the decision of the question is an anatomical one, viz., the extent to which the Douglas pouch extends normally downward behind the vagina. Thus Dr. R. B. Maury points out that, in common with some other writers on the subject, I have in the former edition of this work represented the Douglas pouch incorrectly, and that it really extends much lower than I have represented it. I am free to confess that the concurrence of testimony—that of the late Dr. Phillips, that of Mr. Spencer Wells, and others—is in favor of Dr. Maury's view on this particular point, and in the new drawings introduced into the present edition the Douglas pouch is repre-

* Fig. 165 represents the outline of the effusion as imagined to be seen from the front. From the same case as that of Fig. 164.

sented in conformity with the conclusions just stated (see p. 194). Thus, in some cases where effusion is found low down behind the vagina there is certainly a possibility—a possibility greater than was previously supposed—that the effusion may be intra-peritoneal. (Analogically the same reasoning applies to the question as to the seat of hæmorrhages in this locality.

The result of my own observations has been the conclusion that the larger number of cases of so-called pelvic inflammation are cases in which the seat of the effusion is outside the peritoneum, and that the term "pelvic cellulitis" is strictly appropriate. Dr. Matthews Duncan, following Virchow in his nosology, would term these cases of "parametritis." Dr. Priestley,* who has written a very complete account of the subject, prefers the term "pelvic cellulitis." In common with several other distinguished authorities Dr. Priestley appears to regard pelvic cellulitis as the more generally present condition. Dr. Emmet regards cellulitis as most common. Dr. Thomas considers that peri-uterine cellulitis is rare in non-pregnant women, while in such cases pelvic peritonitis is common. The chief authority on the opposite side is Bernutz, followed by Dr. Tilt and Dr. Meadows in this country; these latter authorities regard pelvic peritonitis as the more common affection.

It is not to be disputed that *post-mortem* evidence and the results of physical examination during life in certain cases is in favor of the occurrence of pelvic peritonitic exudations, effusions, contractions, and adhesions resulting therefrom in perhaps a considerable number of instances. And it is to be conceded also that pelvic peritonitis may occur as an independent and sole condition.

It appears, judging from the facts and opinions of those who chiefly advocate the pelvic peritonitis view—Bernutz, for instance—that in a considerable number of cases of pelvic peritonitis the influence of gonorrhœa is to be traced. Looking at the analogy between the testicle and the ovary, it would not be surprising that the ovary and its peritoneal covering should be inflamed in cases of gonorrhœa. Dr. Thomas appears to take this view of the matter.

Certain facts which have come under my own notice would lead me to the conclusion that pelvic peritonitis,

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* "Reynolds's System of Medicine," vol. x.

with effusion more or less, is liable to be witnessed in cases of gonorrhœal origin.

In drawing any general conclusion from the facts recorded by various observers regard must be had probably to the locality where the observations were made. For instance, it appears from the remarks of Dr. Emmet that pelvic inflammation is liable to occur in patients treated in New York to a degree and with a frequency which does not appear to be observed in London. And it may be that the supposed greater frequency of pelvic peritonitis in Paris is due to climatic or local peculiarities. Possibly also to the greater influence or greater frequency of the gonorrhœal element in one place rather than another. One possible result of pelvic inflammation is the formation of pus; and thus originates what is termed "pelvic abscess."

PELVIC CELLULITIS.

The first result observed in cases of pelvic cellulitis is the occurrence of an effusion which quickly assumes a certain degree of hardness to the touch, and later on becomes very hard. This hardness of the effused material was first described by Doherty, and it is a now well-recognized physical attribute of these effusions. The effusion may be slight in extent or more diffuse and extensive. It would seem that in some cases it is of a transitory character, constituting a sort of œdema, which may undergo rather rapid absorption; but in most cases it persists, the hardness increases, perhaps the effusion extends and becomes more considerable. Dr. West describes it as "acute purulent œdema." Virchow, who has specially examined the effused products, describes it under the term "diffuse puerperal metritis and parametritis;" the tissues become swollen, thickened, hardened, and œdematous, and a fluid, first transparent, then opaque, exudes on section. The cells are enlarged, their contents thicker; they split up, and groups of smaller roundish granular cells are seen. As further consequences, there may occur coagulation and obstruction in the lymphatics there situated, and metamorphosis into purulent fluid.

The seat of the effusion now under consideration is the areolar tissue near the uterus: most commonly it is on the lateral aspects of the uterus, between the folds of the broad ligament, but it may be situated in front of the uterus or

behind it. It is more particularly concerning the cases when the effusion occurs *behind* the uterus that it is doubtful whether or not most of such cases are not really cases of pelvic cellulitis.

Once started, the effusion may spread to a considerable distance in the pelvis, and even beyond it. The spread of the effusion follows, however, certain definite paths, the fasciæ of the pelvis being so arranged that extension necessarily occurs in these definite directions. König * gives the result of some interesting experiments on this subject, made on bodies of women dying after labor. Injections of air or water were made into the cellular tissue under the broad ligament. The results were—1. Exudation into the cellular tissue in the neighborhood of the tubes and ovary travels primarily along the course of the psoas and iliacus muscles, and then travels into the pelvis proper. 2. Exudations starting from the antero-lateral part of the cellular tissue, where the body of the uterus joins the cervix, fill first the cellular tissue of the true pelvis laterally, to uterus and bladder, and pass then with the round ligament toward Poupart's ligament, and thence to the iliac fossa externally and backward. 3. Starting from the posterior part of the base of the lateral ligament, the parts first filled are the posterior and lateral parts of the pelvis—viz., the Douglas fossa; and the exudation then follows the course of those described under head 1. The effusion may, as I have myself observed, pass also out of the pelvis through the large or small sacro-sciatic notch. It may also pass across the pelvis in front of the bladder from one side to the other, and once above the pelvic brim it may extend to a very considerable distance upward, dissecting the peritoneum away from the abdominal fascia and inserting itself between. The effusion, when large, displaces the uterus toward the opposite side of the pelvis. When at all considerable it appears to be inseparable from the pelvic wall, but its boundary in other directions is generally well marked. The surface, which can be felt, has a rounded smooth character.

When the effusion is posterior it forms a large tumor, which may push the uterus far forward close to the symphysis, and it extends downward toward the vulva, behind the vagina. It is in reference to these particular cases that

* "Archiv f. Heilkunde," 1862, No. 6, p. 481.

there is doubt whether the effusion is not really in the peritoneum in some instances.

The effusion, having become hard, remains for a period, generally several days at least, and then undergoes absorption, becoming insensibly melted down, *or it is converted into an abscess.* When the conversion into pus occurs the fluid thus formed discharges itself by bursting into the vagina, into the bladder, into the rectum, and sometimes into the peritoneum, or passes out of the pelvis altogether to the groin, the iliac region, or the gluteal region, or down the inner side of the thigh, forming an evident external swelling, which either breaks or disappears. The formation of an external swelling does not necessarily indicate the presence of an abscess, for the effusion may so extend outward, without transformation into pus, as a necessary consequence. And, after all, bursting, when it does occur, may happen internally without formation of any external aperture. Dr. M'Clintock found that in 70 cases of pelvic cellulitis, of puerperal origin, the case ended thus: 37 ended in suppuration with discharge of pus; 24 of these burst or were opened externally—viz., 20 in the iliac region, 2 above the pubes, 1 in the inguinal region, and 1 beside the anus; 6 were discharged *per vaginam*, 5 by the anus, and 2 burst in the bladder. In not one of these puerperal cases did the abscess burst into the peritoneal cavity, while this result was several times observed in a much smaller number of non-puerperal cases. Dr. West states that, in 34 out of 52 cases, the broad ligament was the seat of mischief, the cellular tissue between the uterus and rectum in 14 cases, and that between the uterus and bladder in 3 cases. Pus was discharged externally in 27 of these 52 cases.

The time occupied by the appearance, continuance, and disappearance of the effusion may, and often is, very considerable, spreading over many weeks in not a few cases, and in some cases months are occupied. When pus has once formed the course of the disease may be very chronic, and when, as sometimes happens, the cavity communicates with the bladder or the rectum, the aperture assumes a fistulous character, and great difficulty is experienced in completely draining and closing it. A like difficulty is sometimes met with when the abscess burrows between the muscles of the thigh.

Causes.—Many cases of pelvic cellulitis occur after parturition, and under these circumstances they appear to be

due either to an injury of the uterus during the parturition —*e.g.*, laceration of the cervix—or to taking a chill; or to be connected with some movement or premature exertion on the part of the patient. The manner in which the affection shows itself, and the circumstances of the case, generally give the notion that the exciting cause is the passage of a septic material into the blood-vessels, or possibly the lymphatics, one or both, and that this is the cause of the effusion. An injury or abrasion of the os uteri is the probable place of entry of such septic material in some cases; in others it may be the imperfectly closed vessels at the placental site. In several cases I have observed, the attack was very distinctly produced by premature physical exertion which it may be supposed led to septic absorption by deranging the contraction of the uterus, or by dislodging coagula from imperfectly closed sinuses of the uterus. It does not appear to me that chills are so often the cause of post-puerperal pelvic cellulitis as has been supposed, though it cannot be denied that cellulitis appears due to chills or external application of cold in some cases.

Bruising or laceration of the cervix uteri appear to be the most common causes of pelvic cellulitis.

The *history* of cases of pelvic cellulitis, of which those following delivery may be taken as typical ones, is generally characteristic. Rigors, pain more or less intense, quick pulse, irritative fever, mark the onset of the inflammatory action; but these initial symptoms may be absent, the patient gradually becoming indisposed, without occurrence of acute symptoms of any kind. Thus it is not uncommon for a patient, who may have got over the period of lying-in tolerably well, to evince three or four weeks later symptoms of general indisposition; she becomes weaker and weaker; she is emaciated, complains of pain down the legs, or in the pelvis; the appetite and digestion fail; there are occasional chills; and after these symptoms have lasted a week or two, the more decided pelvic symptoms—difficulty and pain in defæcation and micturition—are evident. If movement be attempted, pain is produced: this may be taken to be due to mere weakness, the real mischief being overlooked. A quick pulse is, however, always present from the beginning. When we are called to the case at a somewhat later period, we usually find that there has been a good deal of pelvic pain and uneasiness, pain and difficulty in micturition and defæcation, high fever, temperature running up to

102° or 103°, with evening exacerbations, night-sweats, hectic, diarrhœa, and all the signs of violent and dangerous constitutional disturbance; and the presence of the tumor now alluded to is perhaps the last thing which is detected. These symptoms may, however, be absent. The tumor is not always painful when touched, though the vagina as a whole is tender and hot to the touch; the vaginal wall covering it is thickened, indurated, and conveying a very different impression from that which is present when a tumor of another kind simply presses on the vaginal wall, and is not connected to it by inflammatory exudation, etc.; at the latter stage of the affection tenderness may be absent, or at all events be much diminished. The hardness of the tumor has been already alluded to as a remarkable feature. In a later period it gives place to softness and fluctuation when undergoing liquefaction, but softness does not, according to my experience, precede resolution.

Neuralgic pains are frequently present, due to pressure of the effused products on the nerves passing through the pelvis. These neuralgic symptoms vary; they are either a sensation of coldness, or increased warmth of the surfaces to which the nerve leads, an intense pain, or other altered sensation. König observes truly, that the external cutaneous nerve of the thigh is the one most frequently affected; at other times the crural nerve chiefly, or the sciatic nerve. One symptom is very frequently present, viz., flexion of the thigh on the trunk; the patient experiences pain when the thigh is extended, owing to the distension around the psoas muscle, and which is necessarily increased by extension. The sign in question is almost pathognomonic of pelvic cellulitis or abscess. Pelvic cellulitis may, however, be unaccompanied by this symptom, for when the mischief is in the anterior part of the pelvis, or in such position as to be out of the way of the psoas and iliacus muscle it may be found wanting. This distinction I have been able to make in several instances.

Other symptoms attendant on pelvic cellulitis and abscess are—vesical catarrh, indicative of proximity to the bladder; rectal disorders; passage of bloody mucus and tenesmus; anomalies of defæcation and micturition, these functions being generally more or less interfered with.

PELVIC ABSCESS.

It not unfrequently happens that the first indication of pelvic exudation is the escape of pus from the vagina or from the rectum. In some cases the transformation into pus proceeds very rapidly, while in others it occupies much time. Acuteness of the symptoms—that is to say, severity of pain, great elevation of pulse and temperature—generally indicate pus formation. But not always. When the pain is severe and the pulse and temperature high, the bursting of the abscess is generally imminent.

The diagnosis of pelvic abscess from pelvic cellulitis is not always easy; the presence of fluctuation is a help in some cases, particularly when the abscess has made its way to the surface of the skin in the groin or elsewhere. In some cases of pelvic abscess, whether resulting from pelvic cellulitis or from pelvic peritonitis, there is a liability to the occurrence of *septicæmia;* and the course of such cases is often fatal. Absorption of septic material into the general blood-current happens more generally when the abscess has made for itself an opening, or when it has been punctured for the purpose of evacuating it. When septicæmia results there may be a quickly fatal termination, or the disease may assume a more chronic form.

The rapidity with which pelvic cellulitis changes into pelvic abscess varies in different cases. I have known an abscess to form in as short a time as three days, and be evacuated spontaneously on the fifth. Usually the formation of pus occurs much more slowly than this.

PELVIC PERITONITIS.

The differences of opinion entertained by various authors as to the frequency of this condition has been already adverted to. It seems certain that plastic exudation may occur in the pelvis amid the ovaries, one or both; also that serous exudation may occur in the pelvis, and that this serous exudation may become encysted by adhesions forming superiorly and shutting it off from the general peritoneal cavity;* also that exudation, quickly assuming a

* Thus, Dr. Matthews Duncan has called attention to certain interesting cases in which large accumulations of a serous fluid have been found behind the uterus, resulting probably from local peritonitis (perimetritis). The cavity enclosing the fluid is supposed to be separated from the gen-

puriform character, may form in the pelvis and constitute a tumor of considerable size behind the uterus in the Douglas pouch and in the parts above this, and that this puriform collection may be limited to the pelvis by adhesions formed superiorly. Further, it appears that the large tumor so formed may burst into the general peritoneal cavity or elsewhere.

The typical severe case is that arising from septic action at the internal uterine surface. For instance, a sponge tent is introduced, allowed to remain too long or otherwise mismanaged, and acute peritonitis is set up together with metritis; a puriform fluid is formed in the pelvis, and the uterus becomes covered by a layer of plastic lymph. Another type of case is that in which the *gonorrhœal inflammation* seizes on the peritoneum covering the ovary on one side or both, and exudation occurs in the pelvic cavity. Bernutz stated that nearly a third of cases observed by him were gonorrhœal in origin.

There are probably several other ways in which pelvic peritonitis originates—*e.g.*, menstrual derangements of various kinds, venereal excesses and traumatic causes.

Pelvic peritonitis apparently differs from pelvic cellulitis chiefly in the fact that the affection is situated more in the middle line and behind the uterus in the former than in the latter; and it is believed by some good authorities that a very large tumor situated behind the uterus in a median position must necessarily be due to pelvic cellulitis.

There appear to be no other very decided points of difference between pelvic cellulitis and pelvic peritonitis other than those—admitting their validity—which have been mentioned. The constitutional and local effects seem to be very much alike in both classes of cases. The symptoms would, on the whole, be expected to be more acute in cases of pelvic peritonitis, and the gravity of the case would be proportionately greater also.

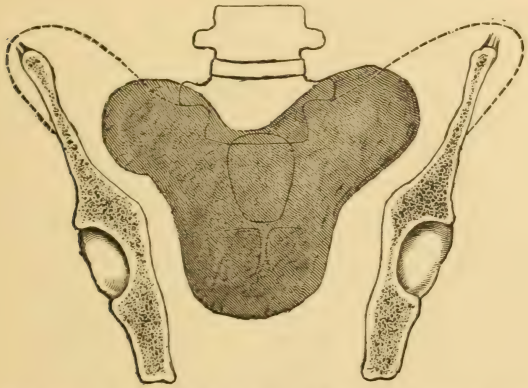
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eral peritoneal cavity by adhesions. In one case as much as eight ounces, in another nine, were drawn off by a trochar, the perforation being made at the back of the vagina. Dr. Duncan contends that the supposed cures of ovarian dropsy after rupture of the cyst into the abdomen are probably cases of this kind. There are difficulties in accepting the latter explanation, the magnitude of the tumor in some of the cases of ovarian cyst rupture being infinitely greater than any case Dr. Duucan brings forward of peritoneal serous cyst. I have myself witnessed a case in University College Hospital where an autopsy proved it to be one precisely of the kind here described.

It seems probable that in some cases pelvic cellulitis becomes complicated subsequently with pelvic peritonitis. Such complication would render the discrimination of the precise seat of the affection additionally difficult.

Certain effects liable to be produced by pelvic peritonitis are very important. Thus, exudations on the peritoneal surface of the ovaries may seriously injure the ovary as a gland, and interfere with the proper discharge of ova afterward in cases where the course of the disease is chronic, or where the peritonitic exudation becomes contracted in such way that unnatural adhesions occur between the surface of

FIG. 166.



the ovary and the pelvic wall. The Fallopian tubes also may become fixed to adjacent parts in such way as to interfere with their proper action. Again, the peritoneal surface of the uterus may become adherent to the ovary or to the pelvic wall as a result of the pelvic peritonitis. Doubtless some cases of sterility are cases where peritonitic adhesions and thick false membranes have tied down the organs and crippled their proper action.

DIAGNOSIS.

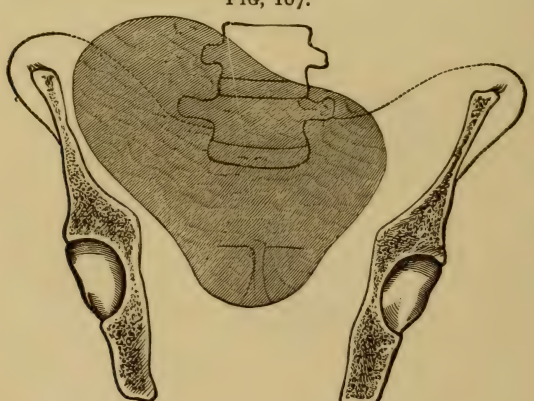
Cases of pelvic cellulitis, pelvic peritonitis, and pelvic abscess may be classed together for diagnostic purposes.

When an enlargement of the lower part of the abdomen is observed in a woman who has been delivered recently, who has recently had an abortion, or who has been the sub-

ject of an operation involving the generative organs, the formation and development of the tumor having been attended with inflammatory symptoms, tenderness, feverishness, etc., the existence of pelvic inflammatory exudation is to be suspected.

The diagnosis is usually easy. The tumor formed in the pelvis may rise above this cavity, and be perceivable in one or other groin, or even considerably higher; or it may form a tumor, rising in the middle line above the pubes. Its limitation is made by palpation and percussion. The skin covering the tumor may become red and inflamed, when

FIG, 167.



evacuation of an abscess is to occur through the abdominal wall. The abscess may, however, burst into the vagina, or into the bladder, rectum, etc.

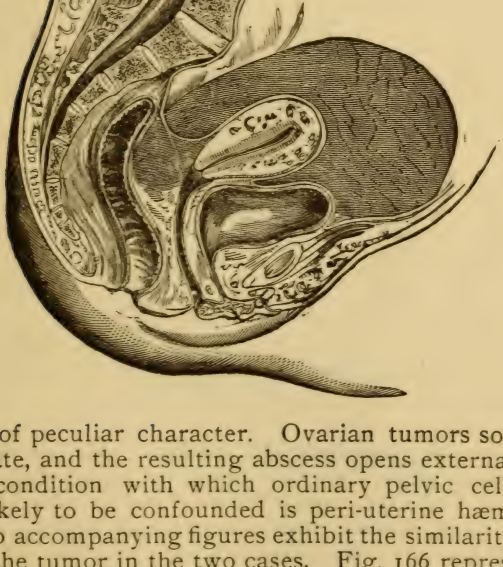
The iliac regions should be carefully and daily examined by the hand, in all cases of convalescence after uterine inflammation, or when the patient had been subjected to the operation of causes tending to produce pelvic abscess. Tenderness on pressure, continuous uneasiness, and febrile symptoms indicate probability of existence of cellulitis. The vagina should be carefully examined by the finger, and resistance or localized hardness may then be found to be present.

There are other conditions capable of giving rise to abscess, which abscess may present at some portion of the abdominal wall, above the groin, or in the middle of the

abdomen. In some rare instances these conditions might be confounded with pelvic abscesses of the more ordinary kind.

Abscess in the iliac region may be due to caries of the vertebral column; abscess above Poupart's ligament on the right side may be due to inflammation or obstruction of the appendix vermiformis. In cases of retained encysted fœtus, suppuration, formation of abscess, and spontaneous discharge of the contents through the abdominal wall, are frequently observed. In this latter event there would be a

FIG. 168.*



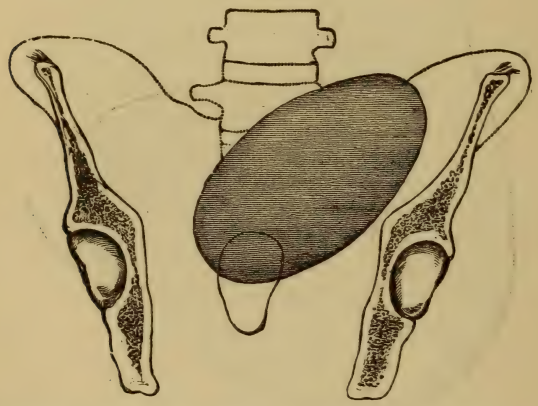
history of peculiar character. Ovarian tumors sometimes suppurate, and the resulting abscess opens externally.

The condition with which ordinary pelvic cellulitis is more likely to be confounded is peri-uterine hæmatocele. The two accompanying figures exhibit the similarity of outline of the tumor in the two cases. Fig. 166 represents the shape of the abdominal tumor in a case of peri-uterine

* Fig. 168 represents the contour of the hard rounded tumor as felt from the vagina. Fig. 169 (on p. 204) represents the contour as supposed to be viewed from the front. Their outlines illustrate a case in University College Hospital.

hæmatocele.* Fig. 167 gives an idea of the tumor in a case of pelvic cellulitis.† The resemblance between the two as regards the configuration of the tumor is obvious. [The *lateral* aspect of the tumor in these two cases respectively is shown in Figs. 168 and 169.] In both the tumor rises from below, and in both cases the margin of the tumor is rounded, generally rising higher on one side, presenting variations in hardness and resistance, and softness and fluctuation, according to the stage of the affection. And it now and then happens that the contents of the hæmatocele undergo a process of suppuration, the hæmatocele becoming converted into an abscess.

FIG. 169.



The tumor due to peri-uterine hæmatocele forms rapidly, that due to pelvic cellulitis slowly: this is the principal distinction.

The general symptoms are marked. The fixed pain in the pelvis, generally on one side; the tenderness on pressure above Poupart's ligament over the brim of the pelvis —a sign rarely absent; the tenderness on vaginal examination; the flexion of the thigh on the trunk on the affected side; the general disturbance, manifested in feverishness, inappetency, hectic, frequent pulse, prostration, gastric disturbance, etc., the occurrence of rigors, or a feeling of cold-

* Case of Owen, Univ. Coll. Hospital, 1866.
† Case of Parnell, Univ. Coll. Hospital, 1866.

ness at the onset of the affection; the pressure signs;—these are the most characteristic indications.

The vaginal examination is of great importance. The tumor perceived by the finger is generally hard, identified as it were with the pelvic wall, often inseparable from the uterus, situated at one side or in front of the uterus, and partly behind it, or chiefly in the middle line posteriorly. It is reached with some little difficulty when the effusion occupies the brim of the pelvis, but even then a careful examination will enable the observer to define its lower border. An abdominal examination will render evident its outline superiorly.

In the first stage the tumor is hard—when liquefaction has occurred fluctuation may be evident.

There are some affections with which pelvic abscess may be confounded—peri-uterine hæmatocele, extra-uterine pregnancy, ovarian tumors of rapid growth (as in a case referred to by König), or which have become the seat of inflammation (M'Clintock). The history of the case is exceedingly important in reference to the diagnosis. Chronic cases of peri-uterine hæmatocele, where the tumor undergoes a process of liquefaction, offer, so far as the physical characters are concerned; most resemblance to cases of pelvic abscess. Careful scrutiny of the facts relating to the development of the tumor, of the attendant symptoms, and the result of abdominal examination will afford means for deciding the question. (See chapter on Hæmatocele, p. 169.)

In cases where retroflexion of the uterus exists it sometimes happens that pelvic cellulitis, or even pelvic peritonitis, is present as a complication. Here there would be a large tumor, constituted by the much-congested uterus, perhaps fixed by exudation around it. The sound would render the diagnosis of such a case easy. Malignant tumors could hardly be confounded with the tumor produced by pelvic cellulitis or pelvic peritonitis.

TREATMENT.

For practical purposes the remarks concerning treatment of pelvic cellulitis, pelvic peritonitis, and pelvic abscess may be made collectively, for, although technically different, they must be regarded, so far as treatment is concerned, from pretty much the same point of view.

We have to do with what may be considered, if I am not mistaken, as a local septicæmic action in most of these cases. The general indications are to prevent further advance of the inflammation or irritating action, to promote the resolution and absorption of the effused products, to promote the escape of purulent collections when such have formed, to sustain the strength of the patient while battling against the depressing influence of the affection, to relieve pain, to assist the action of the bowels, and, generally, to do what seems required to promote the restoration of health.

Rest, in bed, is absolutely required. Nothing, perhaps, is more important than this. And it is even advisable, in most cases, that the patient should not be allowed to move from the horizontal position for any purpose. Cases are often unduly protracted from want of attention to this precaution. This applies in all cases, whether there be simple cellulitis, or pelvic peritonitis, or abscess. It is in some cases very useful to place a pillow, or double inclined plane well cushioned, under the knees, to relax the psoas and iliacus muscles.

Rest must be continued for some time, even days after the patient is feeling better. The malady is very tedious, and has a great tendency to recur. If the patient is allowed too soon to sit up, it is almost certain there will be fresh inflammation, exudation, and elevation of temperature.

When abscess exists, or has been opened on the surface, the position of the patient should be such as to favor escape of the fluid contents.

Pain requires to be treated by soothing remedies. Vaginal injections of water, temperature 100° to 105°, are very grateful to the patient, and may be used twice a day. Hot fomentations, or linseed-meal poultices, are often applied to the hypogastric region. Morphia suppositories or laudanum may be placed in the rectum to relieve pain and discomfort and sleeplessness.

The bowels require careful attention. One of two plans I have generally employed—either to give a small dose of castor-oil regularly every other day, or to order an enema of tepid water every second day. Collections of fæces are liable to occur and give great discomfort. The room should be kept moderately warm—60°. The whole body should be sponged once a day with warm water, this being carefully done so as not to chill the patient.

The diet should be liberal. Most patients are weakly and prostrated, and there is reason to believe that this is an initial condition, and that, had it not been for the general weakness, the patient would not, in the majority of cases, have become affected with the cellulitis. Hence, careful nourishment is required. The appetite is almost always very indifferent. For food, eggs, soups, Brand's essence of beef, Valentine's meat juice, beef-tea, and milk are suitable at first. They must be given frequently, in small doses at a time. A little champagne or weak brandy and water are often of service. If an abscess exist, and it is in process of discharging, the patient may require what seems a very large quantity of nourishment and stimulants. When it can be given, meat may be administered a little at a time. The feeding of the patient in a case of cellulitis, or abscess, is a matter of quite first-rate importance, and I have several times observed a most marked improvement to set in from the date on which particular attention had been devoted to it. Care must be taken to give food at night—a matter often neglected.

Quinine alone, or with iron, is often required; dilute nitro-hydrochloric acid and bark is a good combination also in many cases. Later on in the case iodide of iron is a good medicine.

The question as to the evacuation of the abscess, when such is present, is an important one. The natural evacuation is undoubtedly the best, unless this is procured at the expense of permanent disorganization of the pelvic viscera; but it is certain that in some cases artificial evacuation hastens the cure very materially. The selection of the time and place for puncture—if early puncture be decided on—requires great judgment. If the abscess be opened from the vagina, extreme care is necessary to avoid wounding the pelvic viscera; a soft point may be chosen for the puncture, if there be no actual pointing of the abscess. Dr. M'Clintock believes that those cases end most favorably which are evacuated externally. Where the abscess points at some part of the abdominal wall, it is better to wait until the skin is thoroughly implicated. If a puncture be made from above, it should be made as near to the pelvic brim as possible, in order to avoid the peritoneum, and if the swelling extend far out toward the iliac region, the puncture should be made close to Poupart's ligament; to avoid the sheath of the crural vessels, the puncture should be made

external to the surface of Poupart's ligament. The aspirator is now frequently employed instead of the bistoury for opening the abscess. When fluctuation is clearly evident, the operation is devoid of uncertainty, but under other circumstances there is risk of missing the abscess altogether. Unless, therefore, the position of the abscess be otherwise than by fluctuation distinctly indicated, it would be better to wait than to operate early, although by so waiting some time would be lost. The Listerian antiseptic method of operating possesses very great advantage in such cases, and I have employed it with great success. A compress of cotton-wool should be afterward lightly applied over the whole hypogastric region.

Mercurial inunctions, recommended in chronic cases, appear objectionable. Iodide of potassium ointment is very suitable and serviceable. Painting the lower part of the abdomen with strong iodine (liq. iodi) appears of great service where induration remains, and it is desirable to remove it. When the abscess burrows in the thigh, strapping of the thigh will prove useful, the foot and leg being previously bandaged.

[Pelvic cellulitis usually runs its course in three weeks. Sometimes it is prolonged to four, five, and even six weeks. It generally terminates by resolution and then it seldom lasts more than twenty-one days. If it result in abscess, which is known by sensations of chilliness and rise of temperature, the sooner the matter is evacuated the better, and we should early search for its "pointing" in the direction of the vagina, and whenever we can detect the smallest point of fluctuation we should resort to the aspirateur. Sometimes it is necessary to repeat the aspiration, and again it is imperative to make a larger opening with a knife so as to insure free drainage. But cases occur in which the matter does not make its way out through the vagina, or the rectum, and then it may be necessary to open it by abdominal section. The late Dr. Brickell, of New Orleans, insisted upon an early use of the aspirateur in this disease, and he gave histories of many cases where the swelling seemed to be very hard and inelastic, and yet when he used the aspirateur he was successful in evacuating small quantities of pus which immediately gave relief to every symptom of blood poisoning. Sometimes the abscess discharges by the vagina or rectum by a tortuous channel, and there is imperfect drainage from a cavity which cannot

be reached and cannot be thoroughly evacuated, and it often seems that the patient must die from pyæmia and exhaustion. In these cases Lawson Tait cuts down upon the abscess through the abdominal walls after locating its situation exactly. He removes the pus by aspiration, then opens the sac and attaches it to the walls of the abdomen in the same manner as my father recommends in cholécystotomy. Then he introduces a drainage tube; the cavity is thereby constantly evacuated and cleansed, and heals up very rapidly. He has reported twelve cases of this sort where life seemed to have been snatched, as it were, from the jaws of death, and every case was successful.]

The treatment of pelvic peritonitis must be conducted on the same principles as those recommended in pelvic cellulitis. In all cases when pelvic inflammation has existed there appears to be a great tendency for the malady to be reproduced, unless great care be taken of the patient during convalescence. The mpatience of the sufferer frequently prompts her to leave the bed before the cure is sufficiently advanced, and it is generally necessary to insist on the maintenance of the recumbent position for a fortnight or so after all pain and local inconvenience have ceased.

In some cases the malady is very protracted, and, spite of good treatment, the powers are so low that no substantial advance is made. Change of room is occasionally advisable under these circumstances.

CHAPTER XLII.

Fibroid Tumors of the Uterus, Polypus, and Fibro-cystic Tumors of the Uterus.

Fibroid Growths of the Uterus—General Remarks—Four Varieties: 1. Sub-peritoneal or Peri-uterine; 2. Interstitial or Parietal; 3. Submucous Fibroid Tumors; 4. Fibrous Polypi—Progress of these Growths as a whole—Absorption—Cystic Transformation—Fibro-cystic Tumors—Illustrative Cases—Recurrent Fibrous Polypus (Sarcoma of Uterus)—Symptoms produced by Fibroid Uterine Growths—Glandular and Mucous Polypi.

Diagnosis.—Tabular Statement of Cases.

Etiology.

Treatment.—Preventive—Removal by Surgical Procedures—Operations for Polypus: by Scissors, Knife, Écraseur, etc.—Operations when the

Growth is Intra-uterine—Polypoidal Tumors—Removal by Enucleation—Destruction by Partial Removal—Treatment of the Hæmorrhage they produce by Incision of the Cervix—Treatment of Interstitial and Sub-peritoneal Growths—Removal of Fibroid Tumors by Gastrotomy—Statistics of the Operation—Hysterectomy—Battey's Operation—General and Palliative Treatment in cases of Fibrous Tumor of the Uterus—Food; Ergot; Kreuznach Baths; Electrolysis; Other Remedies.

The uterus is liable to be affected with growths of a peculiar character, variously designated "fibroid tumor," "fibroma," "myoma," "fibrous polypus," etc. The "fibro-cystic" tumor of the uterus appears to be a variety of the same kind of growth.

These fibroid growths are very important in the pathology of the female sexual organs. They often interfere mechanically with the uterine functions, cause difficulties in menstruation, pain, prevent impregnation, lead to miscarriages, and give rise to various minor inconveniences. They sometimes destroy the subjects of them.

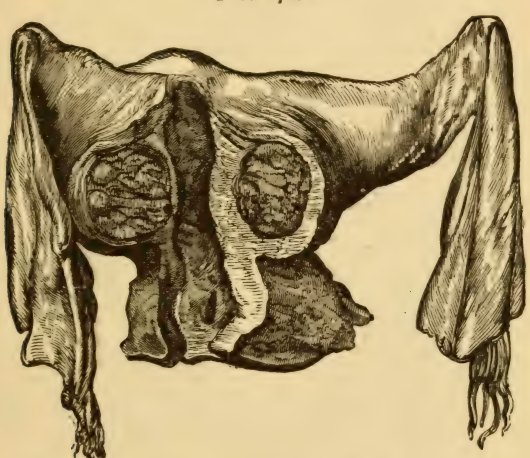
Any part of the uterus may be the original seat of the affection. In their essence these fibroid growths have a structure like that of the uterus. They are, for the most part, rounded, well-defined masses, more or less isolated from the adjacent parts, but still preserving, when in an active state, a regular vascular connection with those parts. They are subject to decay, absorption, and certain curious changes, and their period of activity is usually limited to the period of sexual vigor. They are found equally in the single and the married, are more usually observed after the age of 25, but often remain up to an advanced age. The particular period of life in which these growths have been observed is that during which the uterus is in the highest degree functionally active. Scanzoni considers that the fibrous tumor of the uterus is most common between the ages of 35 and 45; but of eighty-seven cases tabulated by Dr. West, twenty-one cases occurred between the ages of 20 and 30. Out of ninety-six cases it was observed by myself in eight cases before the age of 26.

It is highly probable that the fibroid tumor of the uterus is very frequently present in cases where its existence is not suspected; for, in certain positions of these tumors, the symptoms are not such as to attract particular attention. For this reason, we may perhaps be justified in presuming that the frequency of the disease before the age of 30 is not indicated in most tables given on this subject. The state-

ment of Bayle, to the effect that the fifth part of women above 35 years old are affected with fibrous tumor of the uterus, does not appear to be borne out by more recent pathological inquiries. The disease is of frequent occurrence undoubtedly, but the case is overstated by Bayle. Sometimes they occur singly; more often we meet with two or more in the same uterus.

The size of these growths varies from a pea to a mass large enough to occupy the whole abdominal cavity. In a case which I have related in the "Obstetrical Transac-

FIG. 170.*



tions," † the tumor, which grew from the uterus near the cervix, measured, when removed from the abdomen, 16 inches in diameter and 44 inches in circumference, and its weight was 42 lbs. The patient, who had been under the care of the late Dr. Uvedale West, of Alford, died almost suddenly, from an attack of hæmorrhage, at the age of 53, and the tumor had been growing for ten years.

In Walter's celebrated case the tumor weighed 71 lbs., and others still larger have been described.

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*Fig. 170 represents a small fibroid tumor of the interstitial variety, growing in the uterine wall. From a preparation in University College Museum.

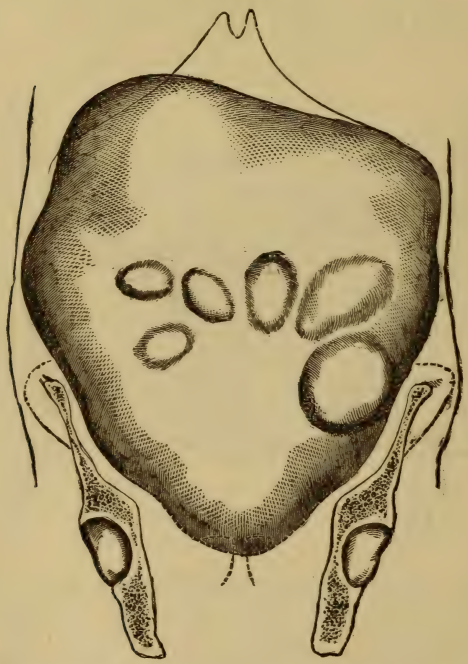
† Vol. ii., p. 240.

Fibroid growths of the uterus are now divided, according to the accident of their position, into the following classes:

a. Those growing from the exterior of the uterus by a pedicle, or sessile, as the case may be—*sub-peritoneal.*

b. Those growing in the thickness of the uterine wall, covered on both sides by uterine tissue—*parietal* or *interstitial.*

FIG. 171.*



c. Those growing from the internal wall, projecting more or less into the cavity—*sub-mucous.*

d. Those attached to and growing from the interior of the uterus, and connected to it by a narrower portion—the pedicle—*fibrous polypus.* Many of these cases have been at one time of their career sub-mucous fibroid tumors.

* By way of contrast to Fig. 170, Fig. 171 shows a fibrous mass of enormous size, from a patient at University College Hospital, who had been the subject of this growth for upward of ten years.

Each of these must be considered separately.

a. The sub-peritoneal fibroid growths may originate at any part of the surface of the uterus, mostly from the upper part of the organ. Sometimes they originate quite low down on the cervix. These tumors attain a larger size than those situated in the wall of the uterus or within it; the very large specimens belong to it; they are attached by a broad or narrow portion. The pedicle may be of considerable length, and corresponding tenuity, and the tumor then hangs freely in the abdominal or pelvic cavity. If the tumor is broadly attached to the uterus, this organ generally increases much in size, but if the pedicle is narrow, such is not the case. In the very large tumor (41 lbs.) previously alluded to the uterus was quite atrophied. We often see more than one sub-peritoneal tumor in the same patient.

A very curious feature in the history of these sub-peritoneal tumors is that the pedicle is sometimes torn across, and the mass entirely separated from the uterus, while the tumor itself becomes fixed to and grows on some other part of the peritoneal surface. This transplantation of fibroid tumors has been observed in several cases; it appears to be produced by the tumor becoming adherent elsewhere; the pedicle becomes stretched, possibly also *rotated* in consequence of the motions of the uterus and intestines, and finally gives way.

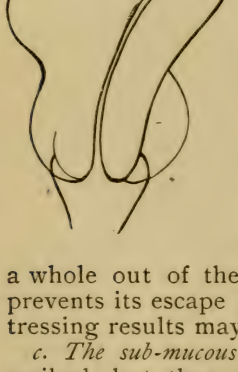
Here it must be mentioned that fibroid growths are sometimes found connected with the peritoneum in the vicinity of the uterus which have an origin independent of the uterus altogether. These must not be confounded with transplanted fibroid tumors of the uterus. It appears that growths in no way distinguishable by their microscopic characters from uterine fibroid tumors may originate in the position above indicated. Sir James Paget observes that they are probably limited to those parts in which fibrous and smooth muscular tissue, like that of the uterus, extends—that is to say, the utero-rectal and utero-vesical folds of the broad ligament.* Muscular fibres lying under the peritoneum covering the uterus, broad ligaments, and ovaries, and serving certain important purposes in the process of ovulation (see vol. i., p. 45), exist in the positions mentioned by this eminent pathologist as those in which fibroid

* "Surgical Pathology," p. 140, 1st ed.

tumors may originate. It is likely that the fibroid tumors of the ovaries—which are extremely rare—belong really to the category now under consideration, and that they originate in the muscular layer under the peritoneum in the neighborhood of the ovary. Even in the ovaries themselves—if we adopt the views of some observers—are to be found muscular fibres, which would account for the initiation of fibroid tumors of the ovary. I believe it will serve a useful purpose if we denominate these tumors as *peri-uterine fibroid tumors*, in order to distinguish them from those actually and primarily connected with the uterus.

b. Interstitial or Parietal Fibroid Tumors.—These do not attain usually so large a size. The uterus always grows as a whole, enlarging often to a very great size. These tumors have usually a loose connection with the organ, being enclosed in a capsule, out of which they may be generally shelled on cutting through the uterine wall containing them (see Fig. 170). They have vascular relations with the uterus at one or more points only. They are found in the wall of the body of the uterus; they distort and alter the shape of the cavity of the uterus; if the whole organ become very large the uterus generally rises as a whole out of the pelvis. In some instances its shape prevents its escape from the cavity of the pelvis, and distressing results may then ensue.

FIG. 172.*



c. The sub-mucous fibroid tumors resemble those last described, but they project more into the uterine cavity. Thus we may find the uterine cavity of great length, but having a crescentic outline owing to one of these tumors, which may be of great size, occupying one side of the uterus. The opposite side is expanded and stretched over it.

All sorts of varieties in regard to position are observed. These sub-mucous tumors are generally encapsuled. After the lapse of some time many of them become fibrous polypi.

* Fig. 172 represents the outline of a uterus affected with fibroid tumors, interstitial and sub-peritoneal, from a patient in University College Hospital.

d. Fibrous Polypi of the Uterus.—These generally originate as sub-mucous fibroid tumors. They are attached to the inner surface of the uterus by a pedicle of very varying thickness. Sometimes the attachment is very wide, covering the whole fundus or the whole of one side. Their size varies from a pea to the size of a child's head, or even larger. When not larger than an egg, they usually escape from the uterus, or partially so, and hang down into the vagina; but when larger than this they may be retained wholly in the uterus for some years. Much depends on the size of the pedicle; when narrow, they may be pushed down into the os uteri early. They present a smooth exterior, and are usually quite hard and firm. They excite much irritation, bleeding, and frequent contractions of the uterus (see Fig. 175).

We may now consider the nature, history, and progress of these fibroid growths of the uterus as a whole.

Their *growth* is always slow. Thus a tumor may be ten or twelve years attaining the size of a melon, and it would hardly attain such a size as this in less than three or four years. This will convey some idea as to the rate of progress.

As to their *structure*, it is pretty uniform. Vogel named them "muscular" tumors. They contain many muscular fibres of the unstriped variety, precisely like those found in the substance of the uterine walls (see Fig. 1A, and Fig. 176). There are also many delicate filaments presenting an undulating or waved arrangement. These two elements constitute the bulk of the tumor, but there are to be seen also many fusiform nucleated cells with granules and molecular matter. They have on section a dense whitish structure, in which can be recognized the rounded nest-like portions of which they are made up. The appearance of the section much resembles that of the uterine wall. Harder or softer, now vascular, now paler; such are the variations observed.

They sometimes remain stationary as regards growth. More generally they tend outward, growing toward the exterior or interior of the uterus, according to their primary position. Growing internally, they become *polypi*, and either remain suspended for a longer or shorter time by a pedicle from the interior of the uterus, or become detached therefrom and expelled entirely.

The question as to whether they are capable of undergo-

ing absorption has been much debated. There can be no question, however, that these growths do undergo absorption in certain cases. Dr. Playfair* has adduced cases to prove this. I have observed in my own practice a sufficient number of facts to thoroughly convince me that such absorption may occur, and have known tumors of consider-

FIG. 173.†



able size to actually disappear after a lapse of time varying from two to three or four years. In other cases, again, I have known them to undergo great diminution. This point will be considered further under the head of treatment.

Dr. John Williams has observed that fibroid tumors of

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* "Obst. Trans.," vol. x., p. 102.

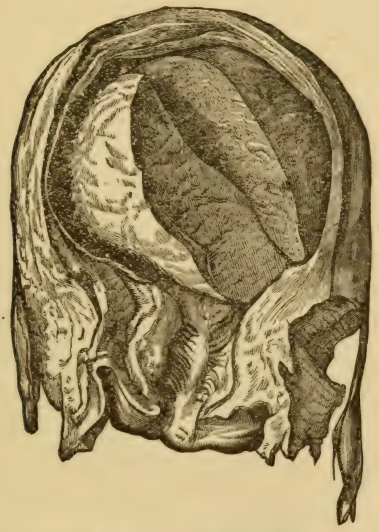
† Fig. 173 gives a lateral view of an enormous fibroid growth, from a patient in University College Hospital. The sound could be introduced within the uterine cavity as far as the point to which the lines in the drawing extend.

the uterus undergo, frequently at all events, notable alterations in size at apparently regular times, these changes having important relations to the menstrual periods.

Dr. Williams * relates five cases in which the changes which occur in the size of the uterus with fibroid tumor were observed over a length of time. The tumors were all of considerable size. Great variations were found to take place.

The tumor was in each case lodged in the uterine wall. In all the cases there was profuse hæmorrhage. The varia-

FIG. 174.†



tions in size amounted to over one inch in vertical measurement, and in one case the transverse measurement varied two inches. The uterus was found to decrease in size immediately after the menstrual period began. The increase in size was noted to occur as early as one week after menstruation, and was found to be progressive afterward. The

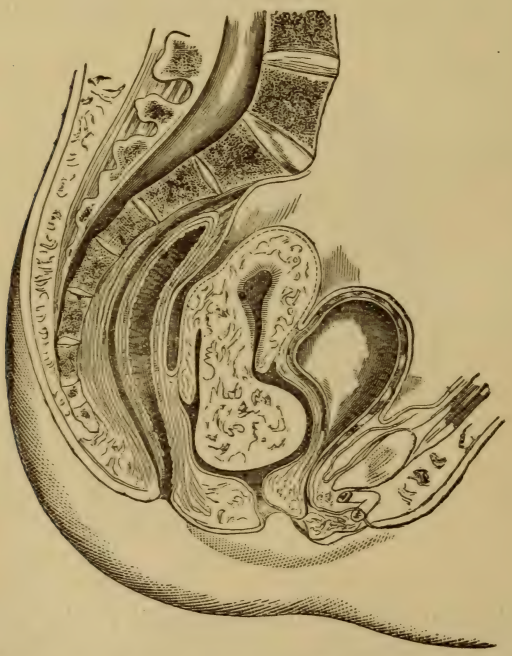
* "On some Periodical Changes which occur in Fibroid Tumors of the Uterus, and their Significance." By John Williams, M.D. *Lancet*, May 15, 1880.

† Fig. 174, from a preparation in University College Museum. A submucous fibroid tumor, polypoidal in character.

decrease was equally great whether the flow was profuse or not. Dr. Williams considers that the decrease was due to contractions of the uterus and tumor, these contractions resulting in expulsion of the blood into the plexuses of the pelvis, the vessels of the broad ligament, and the decidua, giving rise to the appearance of congestion.

Fibroid growths of the uterus sometimes undergo a *cretaceous transformation*, becoming smaller in bulk at the same

FIG. 175.*

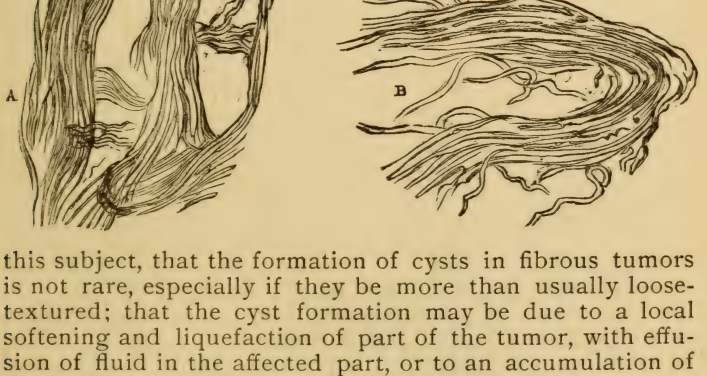


time. Another change occasionally observed is the *cystic transformation.* Thus a fibrous polypus may become changed, after remaining in utero some time, into a cyst-like body, each cyst containing fatty *débris.* Here the "cysts" probably represent the centres of development of the original fibroid tumor. Of this I have related a case. The

* Fig. 175 represents a fibrous polypus projecting from the uterus into the vagina: operated on in University College Hospital.

so-called "fatty polypi" of the uterus are instances of the same kind. The cystic transformation does not appear to affect parietal fibroid tumors, but we have some very important instances of it in that tumor which is now and then found external to the uterus—the fibro-cystic tumor of the uterus. A careful examination of the facts recorded leads to the conclusion that these fibro-cystic tumors, which in many particulars so much resemble ovarian cystic tumors, are primarily fibroid tumors, either sub-peritoneal uterine fibroids, or sub-peritoneal peri-uterine fibroids (see p. 213). The importance of these rare tumors is great, inasmuch as they have been mistaken for ovarian tumors. Hence the interest of this cystic transformation. Paget* remarks on

FIG. 176.†



this subject, that the formation of cysts in fibrous tumors is not rare, especially if they be more than usually loose-textured; that the cyst formation may be due to a local softening and liquefaction of part of the tumor, with effusion of fluid in the affected part, or to an accumulation of fluid in the interspaces of the intersecting bands; and he accounts thus for the formation of the roughly bounded cavities which may be found in the uterine tumors.

Case I.—The following case of fibro-cystic tumor of the uterus is related by Mr. Spencer Wells.‡ The patient was single, æt. 53; there was an irregular, obscurely fluctuating tumor in the abdomen, menstruation latterly scanty, abdo-

* "Surgical Pathology," vol. ii., p. 137, 1st ed.

† Fig. 176 represents the microscopical structure of an ordinary fibrous polypus: A the harder central, and B the softer external layers.

‡ "On Diseases of the Ovaries," vol. i., p. 354.

men increased in size from 1853 to 1863, when an operation was undertaken. The tumor was closely adherent to the right iliac fossa, connected with the uterus by a thick band; it was a fibro-cystic growth from the right side of the fundus; its solid portion weighed 16 lbs., and from a large cyst within it 26 pints of fluid and 4 lbs. of lumpy masses of decomposed fibrin were removed. The uterus was twice its natural size, the os was situated high up, and behind the tumor.

Case II.—A second very interesting case is also recorded by Mr. Spencer Wells.* The lady, æt. 45, was operated upon as for ovariotomy. Ten years before, two tumors the size of a goose egg had been detected by Dr. Stokes, one central, a little above the umbilicus, the other under the anterior-superior spinous process of the ilium. At the time of the operation, there was above much ascitic fluid, below what appeared to be a multilocular cyst. The tumor was found to consist of two parts: the left, which was removed, was attached to the uterus, and to the other part, which was not removed. The removed portion measured 18 inches by 12, and was 7 inches thick, weighed 20 lbs., in addition to 12 pints of bloody serum removed during operation. It was composed of fibrous tissue split up by little cavities containing serum. In some parts were little masses like fibroid tumors—these in process of fatty and calcareous transformation. In others cysts with blood contents, one of which was the size of an adult head, divided into several compartments. The second tumor, removed after death, measured 18 inches by 16, and 7 inches thick, attached by a pedicle 3½ inches long and 2 broad, which pedicle was itself hollowed into cysts. In it was one large cyst 12 inches in diameter. The uterus was a narrow tube 7 inches long.

Case III.—In a case operated on by Mr. Baker Brown in 1862, the age of the patient was 36. Enlargement of the abdomen for six years. The tumor could not be removed. The specimen, removed after death, was exhibited at the Pathological Society, and reported on by Mr. Holmes and Mr. Nunn.† The fundus of the uterus was directly continuous with the substance of the tumor, the solid part of the tumor separated into two parts near the uterus by interposition of large cysts. The mass of the tumor was situated in the sub-peritoneal tissue, and adhered above to the

* *Op. cit.*, p. 356. † "Trans. of Path. Soc.," vol. xiv., p. 199.

omentum, in the tissue of which some fibrous nodules were to be seen. . . . "The great tumor was made up of a mass of nodules or rounded tumors of a fibrous appearance and consistence, separated from each other by large cysts, in many of which a purulent fluid was still contained. The tissue of the tumors resembled under the microscope the ordinary fibroid tumors of the uterus, but many of them contained cysts of various sizes, and in almost all some very small spaces, which seemed the commencement of such cysts, could be seen. The reporters considered it to be a specimen of fibro-cystic tumor, attached to and incorporated with the fundus uteri, but probably originating in the sub-peritoneal tissue in its neighborhood.

A review of the facts relating to these fibro-cystic tumors renders it probable that the cavities in them are hardly cystic in the true sense of the word. They appear to be often formed by the breaking up or softening of parts of the tumor by hæmorrhage within it, by formation of puriform material, and other changes of a destructive character. Further, these tumors appear always to have a very chronic course, a fact which should be of great service in their diagnosis from ovarian tumors.

Recurrent Fibrous Polypus. Sarcoma of the Uterus.—This designation is applied to a very rare affection. It is a growth proceeding from the inner wall of the uterus, and projecting downward through the os in the manner of ordinary fibrous polypus, but differing from ordinary polypus in that a new tumor is liable to grow soon after the old one is removed.

Case of "Recurrent Fibroid Tumor" (Dr. West).*—A polypus the size of a pigeon's egg was found protruding from the os uteri. Portions of it were torn away by repeated operations, nine of which were performed in the course of a year and a half, but the growth always recurred, and, after having been six years under observation, the patient died. Her age was 22 when first seen; after death a large tumor was found in the abdomen, like that in the uterus, and continuous through the uterine wall with it. Similar tumors were found in the lungs, in the pericardium, and in the body of the sixth cervical vertebra. The tumors were all alike, composed of oat-shaped cells, mingled with others

* "Diseases of Women," 2d ed., p. 333. For a particular account of the *post-mortem* appearances in this case, drawn up by Mr. Callender, see "Trans. of the Path. Soc.," vol. ix., p. 327.

of a flattened fibroid form. The tumors were lobulated, divided by septa; they were soft and elastic. The tumor within the uterus grew from a broad base.

Case related by Mr. Hutchinson.* There was a recurrent fibroid tumor of the uterus, assuming a polypoid shape, in a woman, æt. 39, the history of which extended over a period of three years, at the end of which time the case ended fatally. The growth was polypoid in shape, soft, and lacerable, and attempts to remove it entirely failed from this circumstance. It was three times partially removed, growing again after each operation. The growth was attached by a broad base to the whole of the fundus and posterior uterine wall. It was soft, lobulated, of a gray-white color, and readily tore up into fibrils, all of which had a parallel arrangement. Nuclei and numerous small cells were seen. The tumor, very distinct from ordinary fibrous tumors of the uterus, presented no resemblance to epithelial or scirrhous cancer. There were no secondary deposits in this case.

The tumors in both these cases appear to have been identical with those found in other parts and known as recurring fibrous tumors. In both instances there were severe floodings, offensive discharges, and other symptoms present in bad cases of polypus uteri.

The *symptoms* produced by fibroid growths of the uterus vary excessively. Hæmorrhage is frequent when fibrous polypus is present, less so in the parietal form, least so in the sub-peritoneal tumor. Watery discharges, sanious, or even offensive discharges attend polypi, but not other cases, as a rule. Pain is usually observed in all varieties of cases. In some cases the suffering experienced is most intense in degree. The degree of pain is in no way related to the size of the tumor, for very large tumors may give comparatively little uneasiness. Menstruation is generally disturbed. In some cases there is very severe dysmenorrhœa. The mechanical results are difficulties in micturition, in defæcation, prolapsus of the uterus, pressure on the veins in the pelvis, and consequent œdema, pressure on the nerves giving rise to pain or numbness extending usually down one of the thighs, etc. These mechanical disturbances vary in kind and degree as the tumor is large or small, and according to its shape and position. It may be so placed and so

* "Trans. of the Path. Soc.," vol. viii., p. 287.

large as to actually block up the pelvis, the functions of the rectum and bladder being then so seriously interfered with that death results.

CERTAIN OTHER VARIETIES OF UTERINE POLYPUS.

Certain growths from the interior of the uterus which now and then assume the characters of polypi must here be mentioned. One of these is the *glandular polypus*. It is an hypertrophy of the mucous lining of the uterus, containing canals or channels, which appear to be the uterine glands enlarged. Dr. Oldham's "channel polypi" seem to belong to this category. Mr. Wood * exhibited a specimen at the Pathological Society having the size of a small walnut, a broad base growing from the fundus. It was soft, very vascular, and there were seen numerous tubes or canals travelling through the substance and connected by strong processes of fibrous tissue. This specimen will serve as a type of the class. They are not common. The so-called "fungous" growths now and then found in the uterus are in most cases simply the result of congestive hypertrophy of the mucous membrane (see vol. i., p. 148).

Next we have *mucous polypi*, as they have been termed, consisting of enlarged mucous follicles from the cervical cavity of the uterus, attached generally by a long pedicle, and hanging down in the vaginal canal. Their size varies from a barleycorn to that of a walnut.

These smaller polypi may occasion hæmorrhages and other inconveniences apparently disproportionate to their size.

DIAGNOSIS.

The diagnosis of the various forms of fibroid growths of the uterus is only to be satisfactorily made by investigating the condition of the uterus physically. Digital examination of the uterus from the vagina is of great service in this respect. The finger, aided by the sound, in this way enables us to estimate very accurately the general relations of fibroid tumors when not of great size. The existence of polypi is ascertained in the same way, it being now and then necessary also to dilate the os uteri, to gain access to these polypoidal growths.

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* "Trans. of the Path. Soc.," vol. x., p. 206.

The examination of the abdomen by the touch is always required to determine the relations of the larger varieties, and the conjoint examination by one finger in the vagina and the other hand laid on the abdomen is frequently a great aid to the diagnosis.

It will thus be seen that when the case before us dates back for any considerable time, the diagnosis up to a certain point is comparatively easy; the firmness and density of the tumor being peculiar and characteristic. The slow growth of the tumor and its firmness and solidity separate it from the ordinary forms of ovarian tumor, but there are some forms of ovarian tumor with which it may more readily be confounded. In cancerous enlargement of the uterus the progress is less chronic than in fibrous tumor; moreover, cancer is often present in other organs also. There are other considerations which are equally significant in the diagnosis of fibrous growths. When the fibrous growths are external to the cavity of the uterus, the symptoms are often very slight, and the general health of the patient may be unaffected, unless the shape or position of the tumor be such as to mechanically interfere with the evacuation of the bladder or of the rectum. In the early stage of the growth of such tumors there may be, however, mechanical derangements, these being entirely absent at a later period when the tumor has risen out of the pelvis into the abdomen. If, on the other hand, the uterus be enlarged *together with* the tumor, as it necessarily is when the tumor is enclosed within it, the symptoms are almost always more severe and such as to attract attention at an early period. Profuse menstruation, hæmorrhages, serous discharges, more or less constant pains, and discomfort of various kinds, which by their association and long continuance not rarely reduce the patient to a very low debilitated state, are present under such circumstances; and a slow-growing. hard, symmetrical tumor, felt above the pubes in a patient with symptoms such as those described, generally proves to be a large polypus of the uterus. The only condition capable of closely simulating this condition is internal cancer of the uterus—a very rare disease, and one which might be expected to have a less chronic course than fibrous polypus. The state of the lower segment of the uterus affords valuable diagnostic information in cases of hard uterine enlargement. When a polypus is present, the examination of the os, and through this opening of the interior of the uterus

by means of the uterine sound, generally gives conclusive information on this point. Slight consideration will be sufficient to show that between fibrous tumors situate in the wall of the uterus, but partly projecting into the cavity, and fibrous polypi, the diagnostic signs would not be very decided. The symptoms presented by the patient give, however, some material assistance. Thus, as observed by Scanzoni, in the case of fibrous tumors growing near the cavity, but interstitial in character, the pains experienced by the patient are generally more severe than when there is a polypus present, while, at the same time, the amount of hæmorrhagic loss is generally much less considerable in the former than in the latter case.

A hard, firm, resisting, well-defined tumor, involving the uterus, reaching as far as, or beyond the umbilicus, which has been growing for three or more years, will, if uniform and symmetrical in shape, probably prove to be a fibrous polypus of the uterus, but if there be a want of symmetry about the tumor we have probably to do with a fibrous growth which is not within the uterine cavity. More generally we are able to recognize this latter fact at once, judging by the unevenness of the surface of the tumor felt through the abdominal parietes, while in other cases it is still more evident from the circumstance that the fingers recognize the presence of rounded, knob-like masses, which are fibrous tumors growing from the exterior of the uterus. Sometimes these growths are pedunculated, and then they are movable to an extent varying with the length of the pedicle.

The solid tumors of the ovaries may, under certain circumstances, present physical signs very closely resembling those of fibrous tumors of the uterus. The greatest amount of difficulty is in deciding between a tolerably large fibrous tumor pedunculated, and to a certain extent movable independently of the uterus, and some solid tumors of the ovary, while the physical inconveniences produced may be identical in the two cases. I recollect seeing an enormous fibroid tumor removed by Mr. Spencer Wells, which to the touch exactly resembled a semi-fluctuating ovarian tumor.* I have myself removed a very large fibroid tumor, the history connected with which suggested the idea of an ovarian tumor previous to the operation. The diagnosis of ovarian

* Described in "Obst. Trans.," vol. xi., p. 73.

tumors, of which the contents are chiefly fluid, from fibrous tumors of the uterus is more easy, the presence of fluctuation and other characters giving important diagnostic criteria. (See Ovarian Tumors.)

The following is a tabular statement of cases of fibroid tumor and polypus observed by me at University College Hospital in a period of a little over four years. It will serve to exhibit the more essential particulars connected with the clinical history of these diseases. Of the total number of 96 it will be found that 72 were fibroid tumors and 14 polypi. Of the women who were married, 78 in number, 30 were sterile. It will be observed that in 8 the disease was observed before the age of 26.

FIBROID TUMORS AND FIBROUS POLYPI.

(University College Hospital, 1866–9.)

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
17	A. H.	S.	0	Fibroid tumor in front and to right of uterus.
20	J. G.	M.	1	Fibroid tumor left side of uterus.
20	E. G.	S.		Small mucous polypus of os uteri.
22	E. D.	M.	0	Tumor behind uterus size of egg.
22	B.	M.	1	Fibroid tumor in anterior wall (? anteversion).
23	C.	M.	0	2 miscarriages. Fibroid tumor.
24	A. C.	S.		Fibroid tumor, size egg, in left side of uterus. Dysmenorrhœa.
25	L. D.	M.	2	Fibroid tumor, size pigeon's egg, to front and right of uterus.
26	L. D.	M.	0	Fibroid tumor, size small orange, in anterior wall of uterus.
26	M. M.	M.	0	Married 5 years. Large fibroid tumor on left anterior side of uterus. (Injection with acetic acid.)
27	E. A.	S.		Fibroid tumor, size small fœtal head, right side of abdomen.
27	A. T.	S.		Large fibroid tumor. (Incision of cervix.)
27	M. A. G.	M.	1	Fibroid tumor at back of uterus.
27	E. S.	M.	0	Fibroid tumor, size of orange, in anterior wall of uterus.
28	E. L.	M.	4	Fibroid tumor behind uterus, size Maltese orange. Last child 3 years ago.
30	M. A. H.	M.	1	Child 5 years old. Fibroid tumor on right side of uterus.
30	S. H.	M.	1	Fibroid tumor on posterior aspect of uterus.

Fibroid Tumors and Fibrous Polypi—(Continued).

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
30	E. P.	M.	0	Married 11 years. Fibroid tumor of uterus, size of fist.
30	J. O.	M.	7	Fibroid tumor to left of uterus, size of small egg. Uterus or bladder prolapsed.
30	E. D.	M.	0	Married 4 years. Fibroid tumor in front of cervix, size, filbert.
30	A. F.	M.	1	Child 10 years old. Fibroid tumor in anterior right wall of uterus. Cavity of uterus ¾ inch too long.
30	D. W.	S.		Fibroid tumor, size orange, to right of uterus.
31	E. N.	M.	1	Child 2 years old. Large hard tumor 6 inches in diameter, on right side of abdomen, apparently uterine. Sound goes in behind it.
31	M. A. S.	M.	0	Very hard tumor behind uterus, size of fist, continuous with uterus. Tumor also above pubes half way to umbilicus.
31	M. B.	S.		Uterus enlarged, anteriorly and to right. Ambiguous swelling also behind it.
32	J. W.	M.	1	Child 15 years old. Two rounded fibroid tumors, one in front and one to left of uterus, connected together. Uterus pressed downwards and retroflexed.
32	S. R.	M.	0	Married 9 years. Small fibroid tumor to right of uterus.
32	C.	M.	0	Married 4 years. Large fibroid tumor, size fœtal head, in front of uterus. Sound enters 3 inches.
33	E. W.	M.	5	Last child 6 years old. Fibroid tumor, anterior wall.
33	S. K.	M.	2	Last child 9 years old. Fibroid tumor to right side of uterus.
33	A. H.	M.	0	Married 9 years. Tumor, size pigeon's egg, in right latero-anterior wall. Treated by incision of cervix internally, and use of stem pessary. Pregnancy followed end of 1869.
34	E. M.	M.	7	Last child 1½ year. Has passed an egg-shaped hard substance, probably fibroid polypus.
34	C. T.	S.		Enormous fibroid tumor.
35	M. A. T.			Fibroid tumor.
35	A. B.	M.	0	Fibroid tumor right side of uterus.
35	E. R.	M.	7	Retroflexion of uterus, and a soft flattish tumor behind it.
35	L. N.	M.	6	Polypus attached to cervix. Operation.
35	S. B.	M.	8	(?) Fibroid tumor in anterior wall.
35	E. B.	S.		Polypus. Operation by scissors.
35	E. C.	M.	1	Child aged 16. Fibroid tumor growing from back of uterus at junction of cervix and body, size pigeon's egg, flattened.

Fibroid Tumors and Fibrous Polypi—(Continued).

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
35	E. M.	M.	0	Fibroid tumors, anterior and posterior to uterus.
36	J. W.	M.	0	Fibroid tumor right side of uterus.
36	M. A. E.	M.	0	Fibroid tumor externally. Signs of disintegration of uterine polypus.
36	E. L.	M.	4	Fibroid tumor growing from back of uterus low down. Last child 2½ years old.
36	E. M.	M.	3	Last child 10 years old. Fibroid tumor to right of uterus (?).
36	A. G.	M.	0	Married 20 years. General enlargement of uterus, but especially on right side. Cervix also large. Vaginal hyperæsthesia.
36	E. L.	M.	4	Also 5 miscarriages, last 9 years ago. Fibroid tumor right side, size egg. Membranous menstruation and dysmenorrhœa.
36	A. J. B.	M. M.	3 3	Fibroid tumor on right side and front of uterus. Also 5 miscarriages. Says has had fibroid tumor removed. Uterus still large.
37	A. W.	M.	0	Large fibroid tumor 8 inches oblique vertical diameter. Lies most to right side. Os uteri drawn up.
37	S. C.	M.	0	1 miscarriage 18 years ago. Fibroid tumor, size orange, right side of uterus.
37	W.	M.	3	Last child 3½ years old. Fibroid tumor to right of uterus, pendulous.
37	C.	M.	2	Last child 20 years old. Fibroid tumor to left of uterus.
37	M.	M.	0	Polypoid fibroid tumor, size of fist. Patient died of pyæmia following dilatation of cervix uteri.
38	S. S.	M.	0	Married 16 years. Fibroid tumor size of gravid uterus at 6 months. Sound passes a little to left, and in front of it.
39	C. P.	M.	7	Nodular enlargement to right front of uterus.
39	E. A.	M.	3	Last child 10 years old. Fibroid tumor back of uterus, size of an egg.
40	A. C.	M.	0	Married 4 years. Fibroid tumor behind uterus, size hen's egg.
40	M. W.	M.	0	Large fibroid tumor posterior to uterus. Incised freely.
40	M. D.	M.	0	Very large fibroid tumor of uterus.
40	M. W.	M.	0	Married 18 years. Fibroid tumor, size orange, behind uterus. Retroversion of uterus also.
40	E. F.	M.	0	Married 18 years. Fibroid tumor, size fœtal head, round, movable, small pedicle.
40	E. D.	S.		Two large fibroid tumors, anterior part of uterus.

Fibroid Tumors and Fibrous Polypi—(Continued).

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
40	C. L.	M.	1	Child 15 years old. Fibroid tumor, size 1½ inch in diameter behind uterus. Sound passes to left.
40	E. C.	S.	0	Large fibroid tumor.
41	D.	M.		Soft polypus, breaking down (?), clots, etc.
42	E. W.	S.		Large fibroid tumor. (In-Patient.)
42	C. B.	M.	1	Fibroid tumor behind uterus, size of fist. Retroflexion also. Child many years ago.
42	C. S.	M.	2	Last child 16 years. Fibroid tumor back of uterus.
42	E. M.	M.	2	Last child 15 years. Polypus. Operation.
42	C. T.	M.	0	Considerable fibroid tumor to right of uterus.
43	F. Y.	M.	1	Last child 22 years old. 1 miscarriage 5 years after. Fibroid polypus or fibroid tumor. Sound, 4 inches.
43	M. A. F.	M.	3	Last child 20 years old. Fibroid tumor, size fœtal head. Uterus also enlarged to left side low down.
44	S. C.	S.		Enormous fibroid tumor, size adult's head, in 3 portions.
44	E. E.	S.		Aggregation of 3 or more large fibroid tumors, altogether exceeding size of fœtal head.
44	C. L.	M.	2	Last child 10 months old. Small fibroid tumor in anterior wall of cervix.
45	C. M.			Polypus, size of filbert.
45	S. D.	M.	1	Also 5 miscarriages. Polypus. Removed by écraseur.
46	E. F.	M.	1	Enormous fibroid tumor extending to 3 inches above umbilicus. 8 inches in transverse diameter. Appears to originate in posterior wall of uterus. Sound passes 4½ inches in front of tumor.
46	S. R.	S.		Fibroid tumor size of adult head.
46	B.	M.	0	Married 17 years. Fibroid tumor to left of uterus.
47	E. D.	M.	0	Pelvis filled posteriorly with fibroid enlargement of uterus, growing also upward to a little above umbilicus.
48	E. M.	M.	7	Last child 6 years. Mucous polypus. Operation.
48	C. J.	S.		Small polypus.
48	S.	M.	0	Fibroid enlargement of anterior part of cervix.
48	E. M.	S.		Large fibroid tumor, size of head. (At one time thought to be ovarian.)
49	R. G.	M.	2	Last child 10 years. Large fibroid tumor, size head. Partly in pelvis.
49	M. A. M.	M.	9	Polypus. Operation.

Fibroid Tumors and Fibrous Polypi—(Continued).

Age.	Initials.	Married or single.	No. of Children.	Remarks.
49	M. B.	M.	9	Fibroid tumor, size nut, in front of cervix.
49	J. R.	M.	4	Fibroid tumor, size orange, back of uterus.
50	J. D.	M.	0	Fibroid tumor, size orange, at back of uterus. Prolapsus of the uterus and tumor externally. Uterine canal almost closed.
50	A. S.	M.		Large fibroid tumor as high as umbilicus.
50	E. S.	M.	0	Large fibroid tumor filling pelvis.
50	M. C.	M.	9	Polypus. Removed by scissors.
50	C.	M.	6	Polypus, size pigeon's egg. Operation.
50	F. D.	M.	12	Polypus, size of apple. Operation.
58	M. S.	M.	5	
64	J. N.	M.	7	Fibroid tumor behind uterus.

ETIOLOGY.

No considerable degree of light has been thrown on the question as to the cause of the formation of fibroid growths in the uterine tissues. Although various theories have been put forward to account for their production, these theories are unsupported by facts of a reliable character.

These fibroid growths may be considered to be parts of the uterine tissues which have become isolated in some way from the uterus as a whole, and which take on a quasi-independent mode of growth, being subject, as regards their growth, to certain laws different from those which they obeyed previous to their isolation.

It seems probable that there may be some influence at work acting prejudicially on the nutrition changes in the uterus and leading to the formation of these growths. They certainly have appeared to me to be more liable to occur in individuals whose general health was in a defective state, and in whom, consequently, the nutrition changes in the body generally were and had been habitually moving slowly, languidly, and imperfectly. General weakness implies local weakness, and I have come to the conclusion that the formation of fibroid tumors in the uterus is connected with defective nutritional vigor of the uterus as a whole.

The foregoing explanation was suggested to me in consequence of my having read, some little time since, papers

by Dr. Salisbury, of Cleveland, Ohio, and Dr. Ephraim Cutter, advocating the administration of a diet largely composed of meat in the treatment of cases of fibroid tumor of the uterus, and from the success which in certain well-marked cases under my own observation had followed the adoption of this plan of treatment.

TREATMENT.

The danger to life from fibroid growths in or about the uterus varies very much in different cases, and is connected almost entirely with the severity and intensity of the secondary symptoms. The most considerable source of danger lies in the oft-repeated hæmorrhages, the chronic menorrhagia, leucorrhœa, etc., in bad cases, and in the exhausting effects of these on the constitution of the patient. In themselves these tumors are almost innocuous, but they may, when large, mechanically interfere with important functions of the body, and in that way bring about a fatal result. In one case where the tumor was of considerable size it occasioned an enormous peritoneal dropsy which threatened life. Hence the indications for treatment vary in different cases.

The removal of the tumor should be effected whenever the circumstances are such as to render the removal safe for the patient. Very frequently the tumor can only be extirpated at great risk, and in other cases the connections of the growth with the uterus are such that nothing less than the removal of the entire uterus will accomplish its complete eradication.

The most simple case is that in which there is a fibrous polypus pendulous in the vagina or projecting at the vulva, attached by a pedicle to the interior of the uterus. The only proper treatment in cases of this kind is removal of the polypus. A whipcord ligature was formerly employed for the purpose of cutting through the pedicle of the polypus, the loop being passed round the pedicle and tightened by means of the well-known apparatus of Dr. Gooch. The pressure of the ligature caused the separation of the tumor in a few days, or longer when the pedicle was of considerable thcikness. This method of procedure is now fallen into disuse. The knife, the scissors, or the écraseur armed with the chain, the wire rope, or a strong wire, are now most largely employed. It has been found that when the

knife or scissors are used the hæmorrhage is either very trifling or very easily controllable; and by the use of the écraseur the liability to hæmorrhage is reduced almost to *nil.* The old plan is vastly inferior to the knife, scissors, or écraseur; for, unless the pedicle be very small, the whip-cord ligature does not cut it through in less than two or three days, during which time the patient is subjected to the great inconvenience of having a semi-putrid mass lying in the vagina, and to the great danger of putrid absorption and consequent pyæmia. It is undoubtedly a matter of great importance to complete the removal of the polypus at once in all cases where it is found feasible.

In the choice of the particular instrument we must be guided by the circumstances of the case. In the case of a polypus with a pedicle the size of a shaft of a feather, it is quite immaterial whether we use the curved scissors, the polyptome (a long hook, the concave side of which has a cutting edge), or the écraseur armed with chain, or wire, or wire rope. Each operator will choose the instrument with the manipulation of which he is best acquainted. There is necessarily more danger of injuring the vagina when the scissors or the knife are used, but even this depends rather on the operator than the instrument. When the pedicle is larger than that above stated, the écraseur armed with chain, or wire rope, is the best instrument, inasmuch as thus the operation is more easily effected, and there is less liability to bleeding. This latter method of cutting across the pedicle is applicable also in cases where the scissors or knife could not possibly be used owing to the position of the pedicle. The chain écraseur is applied with difficulty when the pedicle is thick, and here the wire, or wire rope (as used in Dr. Braxton Hicks's instrument), is most valuable. The size of the rope must be increased in proportion to the thickness of the pedicle. A modification of Gooch's apparatus, made extremely strong, and capable of being used with any size of the wire, or wire rope, is made by Messrs. Weiss, and has proved very useful in cases of polypus with a very thick pedicle. Dr. Braxton Hicks's instrument has been found effective in many such cases. Meyer's instrument (see Fig. 140), in which a very strong pianoforte wire is employed, is exceedingly good, and I have used it successfully in numerous cases. I have employed the écraseur with chain, and also with strands of wire, and the scissors, for the removal of fibrous polypi. If the pedicle is

small, the scissors answer every purpose, but if it is thick the écraseur is to be preferred. In the case of a large polypus projecting through the os uteri into the vagina, we may, it must be recollected, have to deal with a partially inverted uterus as well as the polypus. The following case illustrates this point:

A tumor was exhibited by Dr. J. Ogle at the Pathological Society, sent to him by Dr. Slater, of Halifax, Nova Scotia. Dr. Slater had removed it by means of the écraseur, and the patient is said to have made a very good recovery. The tumor was referred to Dr. Ogle, Dr. Marion Sims, and myself for a report, the substance of which was as follows:* "The tumor has the shape of a melon; it is $4\frac{1}{2}$ inches in diameter, $2\frac{1}{2}$ in thickness. On one aspect is a surface 1 inch long, ovoid in shape, slightly depressed, and perfectly smooth. This surface was evidently a part of the peritoneal surface of the uterus. The tumor consists of a polypus growing centrally from the interior of the uterus. In separating the tumor, the écraseur had cut away the portion of the uterus with which the polypus was connected, which portion formed, in fact, this pedicle of the tumor."

This case is a very unusual one, and indicates the propriety of measuring the cavity of the uterus before cutting through what may appear to be the pedicle. A somewhat similar case is depicted in Fig. 130.

The manipulations necessary to remove a polypus of the more ordinary form require a word or two. I have found the best method is to pass a piece of stout whipcord round the pedicle, to slightly tighten this, and then to drag upon it. This brings the neck of the polypus lower down and better within reach, supposing the scissors or any other cutting instrument to be used. A strong vulsellum forceps answers the same purpose, but not quite so efficiently.

In rare instances uterine fibrous polypi attain an enormous size before they are expelled from the uterine cavity into the vagina; and in such cases, although the tumor is in the vagina, the mere size of the tumor creates a difficulty in reaching the neck of the polypus. Under these circumstances it has been found necessary to remove the tumor piecemeal; to cut away or remove as much of the tumor as can be reached at one operation, and to wait until the re-

* "Trans. of Path. Soc.," vol. xvi., p. 211.

mainder is expelled lower down before again operating. When the mass is very large, it may be necessary to dilate the vagina by means of a caoutchouc bag filled with water or sponge in order to reach the tumor more readily.

When the polypus has been removed, the patient should be kept quiet for a few days, and in most cases it is advisable to give an opiate after the operation. Should hæmorrhage occur after the operation, it will be easily controllable by carefully plugging the vagina.

The next cases we have to consider are those in which the fibrous growth is attached to the interior of the uterus by a pedicle, the growth itself, however, remaining still within the uterus. The os uteri may be found small or tolerably widely open. To Sir J. Y. Simpson is due the merit not only of first pointing out how the diagnosis is to be made where the os is found closed—viz., by artificial dilatation of the os uteri—but also of first practicing the operation of removal of polypi from the interior of the uterus under these circumstances.* The thickness of the pedicle of the polypus may vary; the size of the growth itself also may vary; but as a rule we do not find that very large polypi attached by a narrow pedicle remain long within the uterine cavity; the more usual circumstance being that the os gradually expands and allows the tumor to fall wholly or in part beyond the os uteri. Where the pedicle is narrow, the operation for the removal of such polypi is not difficult, but it is more difficult than when the polypus is lying in the vagina. The removal of a polypus from within the uterus is quite feasible, and it is, in most cases, a proper operation. We may judge roughly of the thickness of the pedicle by endeavoring to twist the growth on its axis. Torsion has been employed in a very few of these cases, but the pedicle is rarely so small as to allow of its being attempted successfully. Knives of various forms have been contrived to cut across the pedicle; such is the polyptome of Professor Simpson—a hook with a knife in the concavity — or the polyptrite of Dr. Aveling (Fig. 177), which is a modification of Simpson's. The instrument is introduced through the os, the pedicle embraced, and thus cut through. Curved scissors may be also employed, but the manipulations necessary are not very easy to perform if the os be narrow or unyielding. The wire or the wire rope

* Original edition of "Obst. Works," vol. i., p. 128.

is best adapted for cutting across the pedicle, the only difficulty being the placing of the rope on the neck of the tumor. In order to enable us to perform the necessary manipulations, the os frequently requires to be artificially dilated. Dr Lombe Atthill * describes and figures a very nicely-conceived method of dilating the cervix in such cases—viz., by the conjoined use of a bundle of tangle tents, by means of which the cervix can be rapidly dilated and the necessary operative procedures within the cavity of the organ facilitated.

Another class of cases is that in which there is a fibrous growth developed in the substance of the cervix uteri, or one lip of the os uteri. These cases are not very common, but the tumor here situate may attain a great size. The treatment of such cases is identical with that applicable in cases of hypertrophy of the cervix uteri (see p. 137 vol. 1).

We next come to the series of cases, respecting the proper treatment of which there is some difference of opinion—viz., those fibrous tumors attached to the uterus by a very broad base, there being a complete absence of anything that can be termed a pedicle. The most manageable of such cases are those in which, although the basis of attachment is broad, yet the tumor itself is of a polypoidal shape. Such a tumor may project partially through the os uteri. The wire-rope écraseur, or the wire ligature, may be used to cut across such a tumor, even when tolerably high up. Various methods of treatment have been practiced in cases where there has been no such polypoidal character of the tumor. Amussat incised the os and cervix, and then separated the tumor from the inside of the uterus by a kind of enucleation, or shelling out. This operation, variously modified, has been carried out more recently by others also. Thus Mr. Baker Brown adopted in several cases a procedure † for the removal of such tumors based on the supposition that, when these tumors are partially broken up or disintegrated, as by cutting a piece out of the centre, they have a tendency to perish and separate spontaneously. Dr. Gooch was the first to allude to this, for he held that when a ligature was applied round the neck of a polypus, the part above as well as the part below the ligature

* "Lectures on Diseases of Women."
† "Obst. Trans.," vols. i. and iii.

FIG. 177.*



FIG. 178.†

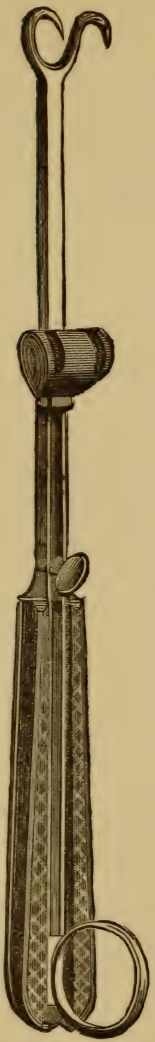
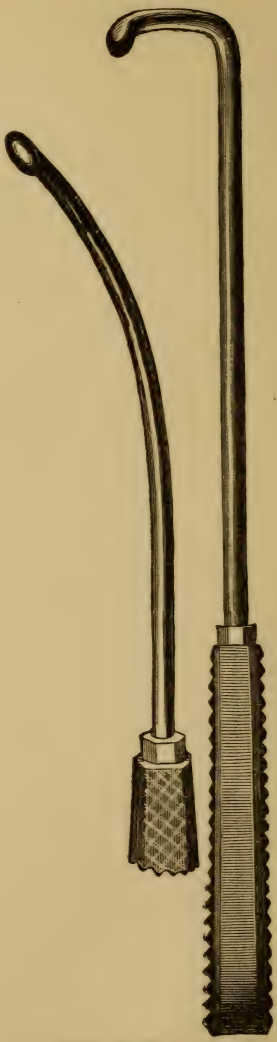


FIG. 179.‡



* Fig. 177 represents Dr. Aveling's polyptrite.
† Fig. 178 shows Sims's tumor tenaculum hook.
‡ Fig. 179 gives two views of Sims's enucleator.

perished. In some cases, however, the attachment and connection of the tumor with the uterus being considerable, little or no effect would be produced on the remainder by the removal of a part of the tumor.

Dr. Marion Sims * has published reports of several difficult operations, and describes some new valuable instruments for aiding in removing intra-uterine fibroids. One of these (Fig. 178) he terms a tumor-hook, by means of which the tumor can be firmly seized and dragged downward. Another (Fig. 179) is a strong bent hook with a cutting edge; the stem very strong, but of such a material that it can be bent as required. This is a new form of enucleator, and by means of these instruments the tumor is gradually separated from the uterus.

Dr. Washington Atlee says: If hæmorrhage is serious and uncontrollable, the os and cervix must be well dilated so as to get free access. Then establish action of ergot; and when this is done pass in a long probe-pointed bistoury, flatwise, by finger, and carry it till it reaches the upper border of tumor. Uterus is now steadied through abdominal walls by an assistant. The bistoury is then turned, and a bold deep incision made into the tumor by drawing the bistoury downward. It often happens that if hæmorrhage has existed before this incision it ceases afterward. After incision, enucleation should be attempted, and will succeed if tumor is not too massive. It is better to remove, if possible, at the time. Ergot is to be continued afterward.

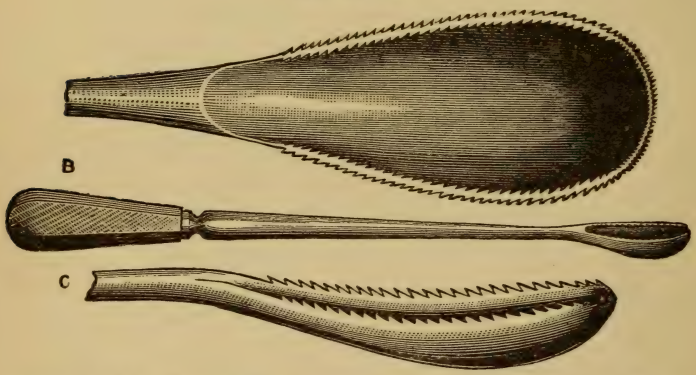
Professor T. Gaillard Thomas † describes a new instrument, "the serrated scoop," for the detachment of sessile uterine fibroids. When the tumor is a sessile growth not exclusively attached and not pediculated (these two cases requiring other procedures), Dr. Thomas resorts to "avulsion," and he offers an instrument, the "serrated scoop," to perform this. The cervix having been dilated, a powerful vulsellum forceps is applied, and the serrated scoop is employed to detach the growth. Dr. Thomas reports its action as admirable.

Dr. Emmet ‡ finds it very advantageous to use continuous traction half an hour or longer during the operation, so as to ensure contraction of uterus as an aid. By traction

* "On Intra-uterine Fibroids."—*New York Med. Journ.*, April, 1874.
† *Amer. Journ. of Obst.*, vol. x., p. 645.
‡ *Ibid*, New York Obst. Soc., 1874.

there is produced a gradual pedunculation owing to vigorous muscular contraction of uterus, especially round the base of the fibroid. In two cases, weight was seven, and four and a half pounds. When size over a pigeon's egg he controls hæmorrhage and forces tumor out of its bed by frequent use of rectal and intra-uterine suppositories of Squibbs's aqueous extract of ergot (xv.–xx. gr. each). As soon as fibroid projects sufficiently he seizes it with double tenaculum passed up as high on tumor as possible, traction being kept up for as long as one and a half minutes. Hæmorrhage is arrested and uterine contraction excited by hot-water injections, and uterine cavity injected or

FIG. 180.*



painted with Churchill's strong tincture of iodine. Occasionally uterus packed with cotton-wool and glycerine, and vagina tamponed; frequent injections of carbolized warm water invariably. Dr. Emmet finds Thomas's scoop very good; he also describes an enucleator of his own, which can be fastened to the tip of the finger.

The enucleation of interstitial or parietal fibroid tumors is not generally practicable from the internal passages, unless the tumor be situated very low down, or in the substance of the cervix. Thus, in a case related by Dr. Whiteford, a fibroid situated in the anterior wall of the uterus near the cervix was cut into after the cervix had been dilated; the tumor itself seized a few days later and dragged

* Fig. 180 represents Thomas's serrated scoop.

downward and finally removed, the patient recovering. Here the hæmorrhages had been very severe.

All operations on fibrous tumors of the non-polypoidal form and shape are somewhat hazardous; pyæmia, inflammation of the uterus, etc., being always liable to occur. These dangers are often very considerable: the risk of perforating the uterus, the inflammation of the uterus which may be set up, the pyæmic condition liable to arise from the cutting, the tearing, and prolonged manipulations which may be required to carry the operation to a termination,—all these are evils not to be lightly encountered; but the cases reported by various operators show that the operation of removal of large intra-uterine tumors is tolerably safe. It appears to be important to establish a contracting condition of the uterus prior to commencing the operation, and to enucleate and tear away rather than to incise in separating the tumor, and it appears to be advantageous to remove the whole tumor at once when practicable.

Deep incision of the os and cervix alone has been occasionally practiced with the view of lessening or arresting severe and exhausting hæmorrhages. The procedure appears to have been first employed simultaneously by Nélaton, Baker Brown, and M'Clintock. The *rationale* of the efficacy of the operation, which really does appear to be of service in some cases, has been variously given. My explanation is, that the hæmorrhage is arrested because no further accumulation of blood in the uterus occurs. When the os is very small, blood may collect, form a clot which distends the uterus, and by-and-by induce contraction, and then expulsion. Just as is the case in abortion in the early months, the uterus is thus alternately full of blood and empty. The dilatation of the uterus becoming greater, the blood or clot is got rid of, but again accumulates. When the os is incised, the blood oozes away readily, there is no accumulation, no stretching of the uterine wall, and hæmorrhage is lessened. The operation does not succeed in arresting the bleeding in all cases; this is not to be expected. An aperture sufficient to admit the forefinger will be found, in my judgment, adequate; but the incision or dilatation must affect the whole of the cervical canal, including the internal os uteri. The canal so enlarged must be well plugged by lint steeped in glycerine and perchloride of iron. This plug will come away in three or four

days, and the finger must be occasionally used afterward to prevent reclosure.

Removal of Fibroid Tumors by Gastrotomy.—In some cases gastrotomy has been performed, and the fibroid tumor removed by excision or tearing from the uterus. And in some cases also the whole of the uterus, together with the tumor, has been removed after performance of gastrotomy.

When the tumor is sub-peritoneal it is of course more accessible from the peritoneal cavity than when in any other position. If the tumor is a large flat sessile one, having a very broad connection with the uterus, its separation from the uterus is a matter of some difficulty. When, however, the tumor is pedunculated, the separation from the uterus is much more easy. An operation for the removal of fibroid tumors is therefore more likely to prove feasible and successful in the latter than in the former case.

It is found in practice not very easy always to determine before the abdomen is opened how far the tumor admits of easy separation from the uterus. Of late years the removal of fibroid tumors by gastrotomy has been performed in a considerable number of cases with fair success.

In 1878 * Mr. Spencer Wells stated that in 24 cases he had removed the tumor, 15 patients dying and 9 recovering. In 21 other cases he had not removed the tumor, but had incised the abdomen, and punctured or incised or removed a part of the tumor, and in only 1 of these cases was the death accelerated by the operation, while many were relieved.

In 1880 † Mr. Spencer Wells stated that in the two years preceding he had operated in 10 other cases, antiseptically; out of the 10 cases there were 3 deaths and 7 recoveries. There had been also 5 cases of incision and puncture, all of which recovered.

A very important element in the question is the apparent safety of what may be termed an exploratory operation. It is admittedly difficult to decide without such exploratory operation whether the tumor can be removed. Mr. Spencer Wells's conclusions, given above, show that this exploring operation is practically safe. Dr. Thomas Savage, Mr. K. Thornton, and Mr. Lawson Tait may be mentioned as holding substantially this view as to the safety of the necessary

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* *Brit. Med. Journ.*, July 27, 1878.
† Ibid., Sept. 4, 1880.

exploration. Dr. Thomas Savage* was successful in five out of six cases, the ligature being employed in some cases and the clamp in others. The stump may be treated by the clamp, according to Dr. Savage, when it is not very thick and fairly long, while the ligature is best for a short thick stump. His cases were treated antiseptically. The cases most difficult to deal with are those in which the tumor is of the soft variety, and widely attached to the uterus. Hæmorrhage is the principal source of difficulty, not only at the time of the operation, but subsequently; for ligatures do not appear to hold very well on the uterine tissues.

We may next consider the operation of removal of the entire uterus together with the tumor.

Dr. H. R. Storer has collected statistics of the operation of *removal of the whole uterus* with the tumor, relating to 29 cases, including two of his own. The second of Dr. Storer's very interesting papers† on the subject gives the following results: Of the 29 cases, 22 died. The first operation included in the series was one of Dr. Clay's, in the year 1843; the last by Dr. Storer, in 1866. The deaths were due in 6 cases to hæmorrhage, in 8 to shock, in 7 to peritonitis or inflammation; 1 (on the thirteenth day after operation) was the result of accident. The operators were thirteen in number.

The first case performed successfully in this country was that by Dr. Clay of Manchester (included in Dr. Storer's series). The case was that of a single lady: the tumor had been growing for some years, and for the last three or four years it had been growing in such a way as to fill up the pelvic cavity. Finally, the patient had become much emaciated, the tumor filled the pelvis so entirely that the finger could not be passed behind it, and there was not even room for the introduction of a bougie in front; and it being evident that life must be brought to an end by the impediment offered to defæcation and micturition, it was determined to remove the tumor. The entire mass, including the uterus and one of the ovaries, was removed, the uterine cervix being cut across just above the os. Two months subsequently the patient was alive and well.

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* "The Treatment of Uterine Myoma by Abdominal Section." Birmingham, 1879.

† *Amer. Journ. of Med. Sci.*, Jan., 1866, and "Trans. of Amer. Med. As.," vol. xvii., 1866.

Hysterectomy, as the operation of the removal of the entire uterus is now generally designated, is a procedure which will, in some cases, be found safer than the removal of the tumor alone. It seems more particularly adapted for cases where the uterine tumor is very large, and widely attached to the uterus. Where the tumor is so situated that it blocks up the pelvis, seriously impeding the performance of the functions of the bladder and rectum, and where it cannot be pushed upward into the abdomen, the operation is indicated. Cases of fibro-cystic tumors of the uterus, in which the process of softening and breaking up is giving rise to dangerous symptoms, are also suitable for hysterectomy. The mere size of the tumor, however, is no guide, for very large fibroid growths sometimes produce comparatively little inconvenience. Thus, in a patient under my care the abdomen was filled by a tumor of ten years' growth, extending up under the false ribs, but she was able to walk about with ease. On the other hand, the increase in weakness, the dyspnœa, and general discomfort may be such as to render it evident that the vital organs are seriously embarrassed in their action; and if the patient be at the same time debilitated by profuse hæmorrhages, the risk of an operation would by comparison be diminished.

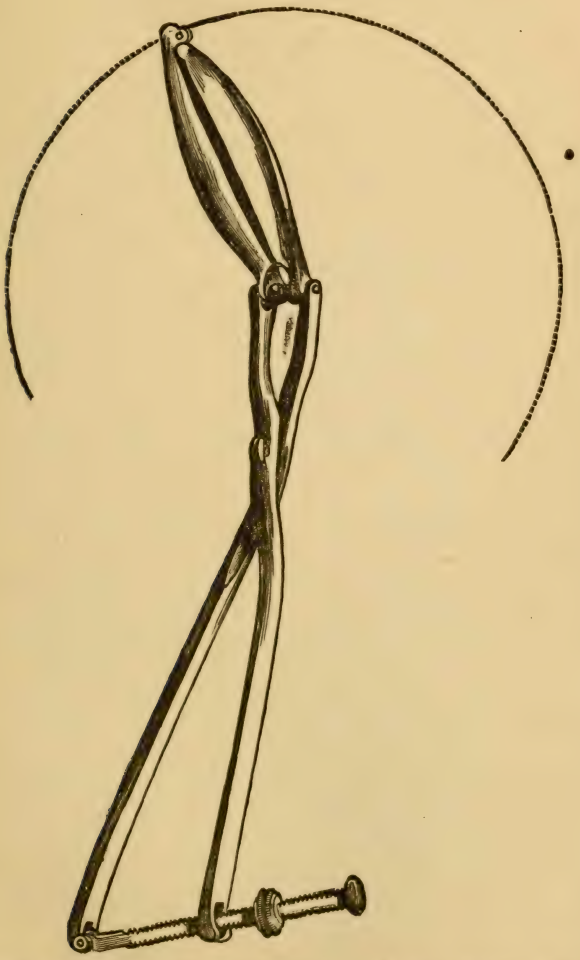
Dr. Storer's "clamp shield" (Fig. 181) is intended to assist in severe operations on the pelvic organs, such as removal of the entire uterus, by lessening the liability to hæmorrhage, and by rendering the action of the écraseur in sundering the tissues more certain and definite. The blades of the clamp are four inches long, the edges are serrated, and the blades are closed by a pair of forceps, very strong, and fixed to the blades by a ball-and-socket joint. The arms of the forceps are long, and great compression by this means is possible. The pedicle to be divided can thus be securely held and compressed in a position in which it would be difficult to accomplish the end by any other instrument.

There are various methods of performing hysterectomy for the cure of fibroid tumors of the uterus.

In these cases the removal of the cervix uteri is not a matter of necessity, and it is practicable therefore to separate the uterus with its growth, leaving the cervix, or, at all events, a portion thereof. The separation having been made by the écraseur, or scissors, the stump can be brought

to the edge of the abdominal wound and there fixed (Koeberlé), or it can be secured and dropped.

FIG. 181.



Battey's Operation (*Oöphorectomy*).—Of late years Battey's operation has been had recourse to in certain cases of

fibroid tumors of the uterus, the object being to put an end to ovulation, and consequently to bring also to an end menstruation and hæmorrhages from the uterus. The hæmorrhages produced by uterine fibroid tumors are sometimes very severe, and when they are uncontrollable by other means Battey's operation may be legitimately had recourse to.

Battey's operation is an alternative to hysterectomy. The two operations have practically the same result. There are as yet no sufficient data for deciding on their applicability to particular cases. It would seem to be easier to remove the ovaries than the uterus, and it would appear to be also a safer operation, more especially when the uterus is very large; but the operation has not always been found so easy as it was anticipated to be.

In the 193 cases of complete double oöphorectomy collected by Battey (Inter. Med. Congress, 1881) there were 37 cases in which the operation was done for the relief of uterine fibroids. Out of the 37 cases 15 died and 22 recovered (59 per cent). This percentage of recovery is not very high, and it may be justly urged that many of the patients who died of the operation might not have died of the fibroid tumors.

GENERAL AND PALLIATIVE TREATMENT.

It appears probable that in the future much greater results than any as yet attained will be achieved by what may be termed general nutritional and invigorating treatment of patients suffering from fibroid tumors of the uterus. As yet various medicinal agents in the form of drugs, taken by the stomach, or introduced through the skin by baths, by hypodermic injection, or by vaginal injection, have been chiefly employed, and undoubtedly with a fair amount of success. As I have already stated in speaking of the etiology of these uterine growths, there seems to be reason for supposing that the general nutritional processes are at a low level of activity in such cases.

Thus Dr. Ephraim Cutter,* following up the notion first suggested by Dr. Salisbury, of Cleveland, Ohio, employed animal food largely in the treatment of cases of fibroid tumor. In seven cases a more or less strictly animal

* *Amer. Obst. Journ.*, vol. x., p. 562.

diet was perseveringly carried out, with results of a very decided character in almost all cases. The tumors diminished or disappeared, and the improvement in health was most marked.

If we suppose that these tumors are allowed to grow because the uterus is generally in an atonic, weak condition, it will not be difficult to understand that a stimulating, health-giving dietary will, by better nourishing the uterus, enable it to discharge its functional duties more completely.

Since I became acquainted with Dr. Salisbury's views, the inquiries I have made of patients as to their habits in regard to taking meat as an article of diet have convinced me that there is here ground to work upon in regard to therapeutic influence on the growth of fibroid uterine tumors. And I have in several cases observed that much benefit has accrued from adopting a very liberal animal diet in such cases. It is true that in these cases other measures were employed at the same time (drugs internally administered, etc.) which might have been credited with some part of the beneficial results observed. Yet my opinion is that the meat had a very decidedly good effect.

[Fibroid tumors of the uterus are seldom dangerous if they do not give rise to excessive hæmorrhages. But they often produce great discomfort and even severe suffering by merely mechanical pressure on important organs. For all metro-rhagies ergotine hypodermically is a valuable remedy. The following is Squibbs's formula:

℞ Ext. ergot (Squibbs's)..... ...gr. 60
Aq. pura.....℥. 250
Ft. solutio.....
Filter, and add water through filter to wash residue, q. s. to make.....℥. 300
Each minim represents *one grain* of ergot.

M. Tauret, pharmacist of Paris, has lately discovered a new alkaloid of ergot which he calls ergotinine. He prepares a translucent solution of it for hypodermic use, given in from two to ten drops. In the maximum dose it sometimes produces nausea and dizziness. Five or six drops will ordinarily suffice, to be repeated in two or three hours if necessary. The Academy of Sciences have awarded M. Tauret a prize for his discovery. My father has used it and thinks highly of it.

Hildebrandt introduced the hypodermic use of ergotine

for fibroids ten or twelve years ago, and where the tumors are interstitial some marvellous cures have been made. I have seen some instances of its success, one in a lady from South America who was sent to us by Prof. Louis A. Sayre in 1875. She had a uterine fibroid larger than the pregnant uterus at five months. In the course of twelve months it had nearly disappeared and she subsequently gave birth to two children, eighteen months between them.

Prof. Byford has had greater success with the ergot treatment of fibroids than any one else in our country. I must refer the reader to the "Transactions of the American Gynæcological Society" (vol. i., p. 168) for his admirable and exhaustive paper. But ergot and all other methods of medication often fail, and we are obliged at last to resort to surgical means to arrest hæmorrhage when life is endangered.

If the tumor project into the cavity of the uterus, and is small, that is from the size of a walnut to that of a cocoanut, and if the cervical canal can be sufficiently dilated, it is practicable to remove it safely per vias naturales, as we do an ordinary fibroid polypus.

But if the tumor be interstitial and of considerable size, too large to be removed per vaginam, and if the hæmorrhage be alarming, then it is a question whether we perform Battey's operation, or extirpate the uterus and its appendages.

Battey's operation arrests the hæmorrhages and atrophies the fibroid. And a short time ago it was thought that it would supersede all other surgical means for this purpose. Lawson Tait has performed Battey's operation oftener than any one else for the relief of bleeding fibroids, but he lost five cases out of twenty-five, 20 per cent.

The extirpation of the uterus and fibroid by abdominal section by previous operators yielded a mortality of 45 per cent. Hence it was reasonably supposed that Battey's operation would supplant entirely that of hysterectomy.

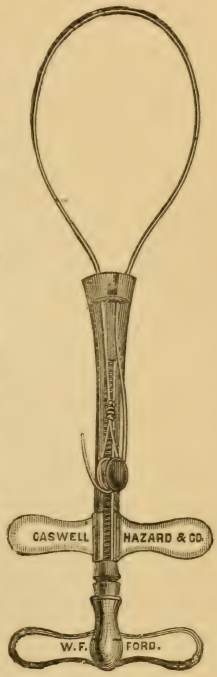
Knowsely Thornton said three years ago, that hysterectomy by abdominal section would soon be as successful as ovariotomy.

Keith, Bantock, and Hégar have lately operated thirty-nine times with but three deaths amongst them, which is a mortality of only 7·65 per cent. Dr. Bantock is my authority for this statement. If the success of these three sur-

geons collectively is an omen of the future, then is Mr. Knowsely Thornton's prediction already fulfilled.

Keith and Bantock make a pedicle of the cervix, when it can be done, using Koeberlé's wire "serre-nœud" to fix it in the lower angle of the abdominal section. This was done long ago by Péan and others, but without the success now achieved by Keith and Bantock.

FIG. 182.*



Hégar and Kattenbach effect the same purpose with an elastic ligature five millimetres thick. Kept at full stretch it is carried round the cervix and firmly knotted. The cervix is amputated above, and the peritoneum is neatly adjusted around the pedicle below the india-rubber ligature. The abdominal incision is closed in the usual manner, till within an inch of the pedicle, where the edges of the peritoneum are alone united, leaving the abdominal parietes at that point open. Thus there is a space surrounding the pedicle which is covered over with peritoneum alone. The end of the pedicle is cauterized, and the open space around and above it is rendered aseptic by a 5 per cent solution of chloride of zinc; and dry cotton-wool of 2 per cent is used as a dressing.

But suppose all ordinary medication has failed to arrest the bleeding from a fibroid, and suppose surgical interference to be impracticable or unjustifiable on account of the exhausted state of the patient. What then are we to do? As I have had in conjunction with my father a case of this sort I here give a brief history of it.

Mrs. B——, age 40, married twice, last time a year ago (June, 1879). Four children by first marriage. Menses regular, but very free indeed for several years past, and more so since second marriage. Periods last five to seven days. Has a profuse serous flow a day before the period begins, and for ten days after it ceases. No pain with flow; great debility and prostration. Is pale and bloodless and thin, all from loss of blood. Ten years ago noticed a small lump

* Fig. 182 represents Koeberle's "serre-nœud." (Reduced about one-half.)

in right hypogastrium, which gradually enlarged till at the end of three years it was very noticeable. The abdomen was about the size as at the fifth or sixth month of pregnancy. The uterus was a large globular mass, filling the hypogastrium and pelvis, extending from the insertion of the vagina up to the umbilicus. It was symmetrical in form and very hard to the touch. The intra-vaginal portion of the cervix was almost obliterated, the cervix appearing to be wholly lost in the great fibroid mass. The canal was very narrow and the cervix indurated. We attempted to dilate the canal for the purpose of exploring the cavity of the uterus, which measured nine inches; but one very small sponge tent produced such continual rigors, great constitutional disturbance, frequent pulse, and exalted temperature, that we were obliged to remove the tent, give anodynes freely and leave the patient without further treatment. Three or four days passed before the inflammatory symptoms subsided. The loss of blood had been so profuse for a long time, and her system was so exhausted that we could not resort to any further surgical means for her relief. All constitutional remedies, such as ergot (hypodermically and by mouth both) had utterly failed to control the hæmorrhage. She was so weak and exhausted we did not dare to perform Battey's operation or to remove the uterus itself, and we had failed to produce any effect upon the tumor by the natural channels.

About this time (1880) Dr. Salisbury, of Cleveland, Ohio, and his follower, Dr. Ephraim Cutter, were calling the attention of the profession to the treatment of fibroid tumors of the uterus by the meat diet. They were very enthusiastic on the subject and claimed great success with it.

Looking upon the case above described as absolutely incurable by surgical means, we recommended her to the care of Drs. Salisbury and Cutter. Last October (1882) we saw her after she had been under the treatment of these gentlemen for two years. The tumor had diminished more than half in size, menstruation was perfectly normal and regular, lasting from three to four days. She was the picture of health, face full and cheeks rosy, and was able to walk several miles a day. She informed me that she ate little besides beef three times a day. Dr. Salisbury claims to have cured a number of cases which were seemingly as hopeless as this one when turned over to his care. I feel satisfied that Salisbury's plan of treatment by animal diet

is a great advance, and will soon come into general use. This treatment is now attracting so much attention, not only in fibroids but in other abnormal conditions of the system, that I deem it important to give here his specific directions for carrying out the treatment, and in his own words.

I. Drinks.—Drink a pint of hot water, one to two hours before each meal and half an hour before retiring. From fifteen to thirty minutes should be taken for drinking this water, so as not to distend the stomach to make it feel uncomfortable. The object of the hot water is to wash out a dirty, yeasty, slimy, sour stomach before eating and sleeping. The water should be drunk long enough before each meal to allow it time to get out of the stomach before the food enters. When thirsty, between two hours after a meal and one hour before the next, drink hot water, clear tea, or crust coffee. Take no other drinks of any kind between meals. At meals drink one cup (8 ounces) of clear tea.

II. Food.—Eat the muscle pulp of lean beef made into cakes and nicely broiled. This pulp should be as free as possible from connective or glue tissue, fat, and cartilage. The "*American chopper*" answers very well for separating the connective tissue: this being driven down in front of the knife on to the bottom board. In chopping the beef, it should not be stirred up in the chopper, but the muscle pulp should be scraped off with a spoon at intervals during the chopping.

At the end of the chopping the fibrous tissue of the meat all lies on the bottom board of the chopper. This may be utilized as soup meat for well people. Previous to chopping, the fat, bone, and tendons should all be cut away, and the lean muscle cut up in pieces an inch or two square. Steaks through the centre of the round are the richest and best for this purpose. Beef should be used from well-fatted animals that are from four to six years old. The pulp should not be pressed too firmly together before broiling, or it will taste livery. Simply press it sufficiently so that it will hold together. Make the cakes from half an inch to an inch thick. Broil slowly and moderately well over a fire free from blaze and smoke. When cooked, put it in a hot plate and season to taste with butter, pepper, and salt. Either Worcestershire, Halford, or Chutney sauce may be used on meats, if desired. A little celery may be eaten at each meal.

Avoid all other foods and condiments. This rigid diet should be kept up till the fibrous growths have either mostly or entirely disappeared; when bread toast, boiled rice and cracked wheat may be gradually brought into the diet list. Other meats may now begin to be taken, such as lamb, mutton, game, fish, and whole steaks. If the fibrous growths begin to increase again, come at once square down to the muscle pulp of beef, and continue it until all traces of the growth have disappeared. Then begin to bring in gradually, as before, other foods, moving along watchfully and carefully, keeping the stomach clean and the urine standing at 1·015 in density, and the appetite good. It takes from one to three years' rigid work to remove fibrous diseases thoroughly, and to break up all the diseased appetites, cravings, and desires that have been at the bottom of the conspiracy in producing such grave pathological states. The patient will lose in weight, from the loss of fat and connective tissue, for the first few months. This, however, is a favorable indication, and need excite no uneasiness. After a while the gain in blood, muscle, bone, and nerve will be greater than the shrinkage; when a gain in weight will take place. This gain will be slow, but it will be all the time advancing steadily in the direction toward the healthy state. The physician and patient must be both satisfied with the steady improvement, even if it is slow. It is the only way open to a perfect cure and to perfect health.

III. Meals.—The meals should be taken at regular intervals, and it is better to eat alone, or only with those who are living on the same diet. All temptation should, as much as possible, be removed from the patient. If three meals a day are not sufficient to satisfy hunger, the patient may be allowed a nice piece of broiled steak between breakfast and dinner, and dinner and supper. These extra meals should be taken at fixed and regular intervals.

If care is taken in following out this plan of diet, it will not be long before the system gets in good order, the digestion and assimilation will go on nicely, and the patient will eat largely and with great relish. You will often be assured by the patient that there is no food so nice as a good cake of the well-broiled *muscle pulp* of beef. The appetite becomes so good, and the relish for the beef is so great, that you need not be surprised to see anywhere from one to two pounds eaten at each meal. The patient should

be cautioned to never eat on a tired stomach. Rest one hour before and after each meal; eat slowly and masticate the food well.]

The general treatment of cases of this kind should then consist—(1) in the very careful nourishing of the patient by animal food, given at first in small quantities at a time, as a rule, but very frequently; after a time the meals may be less often but more in quantity; (2) in the employment of baths, rubbings and friction of the skin, whereby the circulation may be quickened, together with moderate out-door exercise.

Ergot has been extensively administered during the last few years hypodermically. Hildebrandt's method* has been most generally employed. It consists in taking up a firm fold of skin, inserting the canula perpendicularly into the crest of the fold to the depth of one half the length of the canula, so that the fluid may enter the thick subcutaneous tissue. Hildebrandt injected about 2½ grains of aqueous extract of ergot (Wornich's), dissolved in water, and a minute quantity of glycerine added. In one particular case related, fifty injections were made between May 22 and Aug. 1. Dr. John Williams uses a solution of sclerotic acid. Hildebrandt's conclusions are, that the treatment is most likely to be beneficial when the tumor is well provided with muscular tissue, when it is sub-mucous, when the walls of the uterus are sound, capable of vigorous contraction, and no inflammatory action present. His results in favorable cases were very encouraging.

My own experience as to the effects of ergot applies to its internal administration. In 1869 I saw, with Dr. Brunton, a lady æt. 47, who had then a tumor, well marked, and which continued to grow for some time afterward, occasioning very great loss of blood periodically. In this case Dr. Brunton subsequently employed ergot given regularly and freely at the menstrual periods, and the result was the subsidence of the tumor.† I have known of other cases also when very decided benefit resulted from the use of ergot.

On the whole, it appears that ergot has in many cases a great power in controlling or diminishing the hæmorrhage and leucorrhœa in cases of fibroid tumors; that in a smaller number of cases it is capable of effecting a decided diminu-

* See his papers in *Amer. Journ. of Obst.* 1875, vol. vii., p. 529.
† Case reported by Dr. Brunton, "Obst. Trans.," vol. xiii., p. 282.

tion in the size of the tumors, and in a few cases of procuring its disappearance, while in other cases its effects are not very obvious. The remedy could only be expected to have a good effect when used for a considerable time. Thus, it might be used daily, for a week together, every other week, and this plan continued for three or four months.

The Kreuznach Water Treatment.—The waters of the baths of Kreuznach have obtained great celebrity in the treatment of cases of fibroid tumors of the uterus.

The course of treatment adopted at Kreuznach* consists in employment of baths of the Kreuznach water, to which a certain quantity of the "mutterlauge" is added, so as to make them stronger. A medium bath contains fifteen pounds of fixed elements, seven of chloride of sodium, seven of chloride of calcium, two ounces of bromide of sodium, and five ounces of chloride of lithia, with other elements in minute quantities. About forty baths are considered the full course. At the same time compresses, douches, and injections into the vagina and rectum are employed. The treatment can be conducted at home by means of water sent out from Bad Kreuznach.

It is a matter of surmise which of the ingredients is the more potent in the action of Kreuznach water. It is generally considered that the bromide is the more important. In practice I have for some years largely employed the bromide of potassium, giving for months together twice a day (10–15 grain doses), and have seen cases in which it has appeared to be of great service. It is very difficult to assign its precise merit, however, to any one therapeutic agent, inasmuch as generally two or three are used concurrently. And thus in certain well-marked cases of improvement under treatment which I could adduce, it is not possible to say positively whether the medicine or the diet should be credited with the good result.

The Woodhall Spa waters (Lincolnshire) contain bromine in even greater quantity than those of Kreuznach. And, so far as can be gathered from recorded cases, those waters have an action resembling Kreuznach water on fibroid uterine tumors.

Treatment by Electrolysis.—Drs. Gilman Kimball, of Lowell, and Cutter, of Boston, U. S. A., have operated on thirty-

* See Dr. Engelmann's account. Paper read at Obst. Society of Edinburgh.

six cases of fibroid tumor of the uterus, of considerable size, by electrolysis. Dr. Thomas reported on the cases to the New York Obstetrical Society in November, 1876.* The electrodes were stylets seven and a half inches long, including the handle, and gutter-shaped; one electrode introduced above the umbilicus, the other below it, to depth of four inches. The current kept up for fifteen minutes, the skin protected by covering the upper part of the stylet with non-conducting material. The electrodes next introduced one on each side of umbilicus: great watery discharge always produced by the operation and much urine secreted. Dr. Thomas analyzes the results, but I have made the following analysis as giving the results more succinctly: In two cases the tumors proved to be malignant; in one the operation was incomplete; in 17 the tumor diminished decidedly, the diminution being in a few cases great; in three cases (very large tumors) the tumor disappeared; in five cases arrest of growth occurred; in six no effect observed; in two cases the patient died.

Various Other Remedies.—Mercurials have been employed in small doses, continuously in some cases. Probably they act best in conjunction with bromine in some form or other. Dr. Tanner found mercury the only remedy capable of arresting hæmorrhage in one case. Chloride of calcium was recommended by Dr. Rigby. Dr. M'Clintock reported favorably of its effects (30–40 drops of the solution of the Dub. Phar. three times a day).

Various secondary symptoms due to fibroid tumors often require attention. In some cases micturition is difficult or impossible without the aid of the catheter. In some cases the tumor has to be pushed up bodily out of the pelvis to relieve the patient of the pressure, and to allow of the action of the bowels; but this elevation of the tumor is not always practicable. Again, during parturition pendulous fibroids may come down into the pelvis, and have to be pushed backward to allow of delivery. In cases where the pelvis is blocked up, great care is required to procure daily action of the bowels. Pain is a symptom very often requiring attention. I have known cases where the suffering was so intense and continuous that the patient was on the verge of despair. I recollect one case in particular, where pain was so violent and so difficult to relieve, that an oper-

* *Amer. Journ. of Obst.*, vol. x., p. 117.

ation was on the point of being performed, when it suddenly abated. Bromide of potash and opium together have the best effect in such cases. It is a good plan in cases where pain is considerable to cover the abdomen with iodine paint and repeat it from time to time.

Dr. W. H. Baker,* of Harvard University, has recently published a valuable paper on "Drainage in Removal of Sub-mcuous Fibroids." He recites six cases. The tumors were all fibro-myomata; all were attached to the uterus over the greater part of the half of their surface; all were in the body of the uterus, the os internum as yet undilated; in all the prominent symptom was excessive menstruation or hæmorrhage; age 32 to 42. The method adopted was, first, dilatation by sponge, for twelve to sixteen hours; then introduction of laminaria tents and further dilatation, followed immediately by enucleation after the method of Emmet, the tumor being dragged out of its bed and removal aided by scissors, Thomas's scoop, etc. The peculiarity is in the subsequent treatment. Dr. Baker inserts a tube into the cervix two and a quarter inches long, with internal diameter of three quarters of an inch. This has slightly flanged edges below, and it is fastened to the os by wire, there being small holes to allow the wire to pass through. Latterly the drainage tube was perforated laterally and its upper extremity bevelled off. Dr. Baker has found this method of drainage most valuable, for there is after the operation a liability for the uterus to become flexed and thus to produce retention of decomposing fluids in its interior, followed by septic poisoning; the uterus being in a state of atony at the time furthers this effect. This method of drainage is limited to intra-uterine tumors, and is "obviously non-essential in some of these."

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* Reprinted from "Archives of Med." New York: Putnam's Sons, 1882.

CHAPTER XLIII.

CANCER OF THE UTERUS, VAGINA, ETC.

Cancer a frequent Disease of the Generative Organs in Women—Etiology considered—Influence of Age—Influence of Child-bearing and Marriage—Statistics—Antecedent Conditions—Laceration of the Cervix Uteri—Its Hereditary Character—Mr. Moore's Opinions on Varieties of Cancer of the Uterus—Medullary—Cauliflower Excrescence—Part of Uterus usually affected—Extension to other parts—Symptoms—Sarcoma of the Uterus—Cancer of Vagina—Duration and Fatality of the Disease.

DIAGNOSIS.—In early Stage—In advanced Stage—By aid of Speculum.

TREATMENT.—Excision of the Cervix in Cauliflower Excrescence—Mode of Operating—Treatment of other Forms of Cancer of the Cervix—Excision—Removal of entire Uterus by Freund's Procedure—Bromine—Palliative Measures: To check Hæmorrhage and Discharges; to relieve Pain; to support the Patient—The Prognosis—Treatment of Cancer of the Vagina or Bladder—Association of Pregnancy with Carcinoma of the Uterus.

Cancer of the generative organs is undoubtedly the most formidable affection to which women are liable. Cancer, which experience has led us to regard justly with fear and apprehension, appears to attack women more than men, but in women the generative organs—the breast or the uterus—are a very favorite seat. In about 23 per cent of all cases of cancer, the location is the uterus or the breast (uterus 18·5 per cent, breast 4·3 per cent, Virchow; uterus 15 per cent, breast 8·5 per cent, Marc d'Espine).

Influence of Age.—Cases of uterine cancer are noticed, for the most part, after the age of 30. The larger number of cases occur between the age of 40 and 50, and about one per cent of recorded cases occurred after the age of 70.

The following is a table given by Dr. West,* as containing the results of his own observations combined with those of Lebert, Kiwisch, Scanzoni, and Chiari:

Between	25	and	30	years.....	26 cases
"	30	"	40	"	120 "
"	40	"	50	"	183 "
"	50	"	60	"	73 "
"	60	"	70	"	35 "
	Above		70	"	5 "
				Total.....	442

* "Lectures on the Diseases of Women," 2d ed., p. 368.

The following is an account of 54 cases observed by myself at University College Hospital, given in quinquennial periods:

Between	28	and	30	years.....	2 cases
"	31	"	35	"	12 "
"	36	"	40	"	8 "
"	41	"	45	"	16 "
"	46	"	50	"	8 "
"	51	"	55	"	4 "
"	56	"	58	"	3 "
				Total.....	53

The earliest instance I have seen was a case in private practice, where the disease began at the age of 23. The patient married at the age of 15, and had had two children, the youngest æt. five.

In 156 cases reported on by Mr. Sibley * the average age at which the disease began was 43·28.

Before the age of 25, then, uterine cancer is a rare disease. Dr. Churchill states that he has witnessed a fatal case in a woman under 25; and the same authority refers to two other cases—one by Wigand, in which the uterus was affected with scirrhus at the age of 14; and another by Mr. Carmichael, fatal at the age of 21. In Madame Boivin's table, 12 cases out of 409 are set down as under 20 years of age; but these cases of early cancer related by Madame Boivin are justly objected to, as probably not being cases of cancer at all. The youngest of Scanzoni's cases was 23 years old.

The opinion of Dr. Walshe, of Sir J. Paget, and others, is that the proclivity to cancer generally increases steadily and progressively with the age. It is to be remarked that, after the age of 50, the frequency of *cancer uteri* appears to diminish; but the diminution is rather apparent than real, for it must be remembered that the proportion of individuals living, and therefore available, so to speak, for cancer, every year becomes less and less.

Influence of Marriage and Child-bearing.—It was formerly a disputed point whether uterine cancer is most common in women who have had children, or in those who have had none. Dr. West says,† "Though ample proof to the contrary has been long since adduced, we still find it some-

* "Med. Chir. Trans.," vol. xlii. † *Op. cit.*, 2d ed., p. 370.

times asserted that single women and those who have had no children are most liable to be attacked with cancer. The truth appears to be the direct reverse of this statement. . . ." Scanzoni gives it as his opinion that, in a certain degree, sterility predisposes to the disease. The statistics of these two observers give the following results: Of 131 married women affected with cancer, 8 were sterile (West). Of 108 married women affected with cancer, 36 were sterile (Scanzoni). All, however, including Scanzoni, agree in considering that, in women who have had *many* children uterine cancer is more likely to occur, and this accords with my own experience. Thus, in Dr. West's 123 cases of cancer, in which the marriage was fruitful, the average number of pregnancies per case amounted to 6·8. In Scanzoni's 72 cases, the average number of pregnancies per case was 7·01. The average number of children per marriage in this country, given by Dr. West, is 4·2—an average certainly much exceeded in the cases of cancer uteri recorded by him, and still more so in the cases of Scanzoni. Mr. Sibley's researches, also the statistics of Dr. Tanner,* tend in the same direction.

The influence of *marriage* seems important. The following are particulars of 54 hospital cases observed by myself: thus—

Of five cases there is no note taken as to whether married or not.

In 48 cases the patients were married.

In one case the patient was single (but had had a child).

In these cases, then, it is remarkable that in 49 cases where it is known whether the patient had been married or not, 48 were married, and the single exception was a patient who, though not legally married, had been married in the sexual sense. This would seem to give reason for the belief that sexual intercourse is not without influence in the etiology of uterine cancer.

Then with respect to the influence of child-bearing, the analysis of my 54 cases gave the following results:

In the 40 women who had had children, the total number of children was 179, or about $4\frac{1}{2}$ children to each, very little in excess of the average number of children in non-cancerous cases, as estimated by Dr. West.

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* "A Clinical Report on Cancer of the Female Sexual Organs." By T. H. Tanner, M.D., London, 1863.

1 patient had	had	12	children,	
1	"	10	"	
6	"	9	"	
2	"	8	"	
2	"	7	"	etc., making a total of 179.

There had been 10 miscarriages.

Seven patients had had *no* children. Of three patients who had been married there is no note as to children or not.

So far as these cases go they would seem to indicate sexual intercourse rather than excessive fertility as a predisposition to uterine cancer.

I have recently looked over my notes of cases observed in private practice during six years (1873–79), 27 in number. There is not one of the 27 in which the patient was single. There are five cases in which it is not stated whether there had been children or not, but in all the other cases childbirth had occurred, two cases excepted, and in one of these latter cases there had been miscarriages.

Laceration of the Cervix Uteri as a Cause of Uterine Cancer.—Observations made by Dr. Emmet of New York, and other eminent American practitioners, tend to show that malignant growths are not seldom associated with lacerations of the cervix uteri. This is a matter of very extreme interest. In this country the subject of lacerations of the uterine cervix is only beginning to attract attention, but in America the lesion has been considered practically important for some time. And it has been found that such lacerations do give rise, or at all events are antecedent to, the occurrence of malignant growths at the cervix uteri.

Speaking of epithelioma, Dr. Emmet * says: "The growth follows an effort of nature to repair or remove the consequences of an injury received in child-birth." Dr. Emmet states that he has never known a woman to have any form of epithelial cancer of the uterus unless she had at some time been impregnated. Thus, of 53 cases of malignant disease observed by him in private practice, 51 had all borne a number of children; the other two had suffered from effects of criminal abortion in early life and remained sterile. The facts related by him concerning 60 hospital patients are almost as striking. Dr. Emmet relates in full a remarkable case observed seven years before, which first made him acquainted with the influence of these lacerations in the production of malignant uterine growths. It results

* *Op. cit.*, p. 493.

from Dr. Emmet's observations that uterine cancer is almost never observed unless in cases where child-birth has occurred or sexual intercourse, with or without conception, had happened. These observations of Dr. Emmet's are confirmatory of the conclusion to which I had myself arrived from facts observed in my own practice as to the influence of sexual intercourse in the etiology of uterine cancer (see page 257).

Dr. W. H. Baker,* of Harvard University, U. S., is a firm believer in the theory of the local origin of cancer. Some cases show a constitutionality from the first, but in the large majority of cases of cancer some local irritation, oftentimes long continued, is the starting-point of the disease. "I know of no more frequent cause of cancer of the cervix uteri than the persistent irritation to which the everted lips of a lacerated cervix are exposed." He would perform Emmet's operation for the repair of such a condition in every instance when the rupture is sufficient to allow any eversion.

Other Antecedent Conditions.—Mr. Moore, in a philosophical essay on the "Antecedent Conditions of Cancer,"† adduced important facts. The evidence, in Mr. Moore's opinion, shows that "the very large majority of cancers spring up without traceable hereditary influence, and the very large majority of such instances of the disease, which are thus independent of the ancestry of the person affected, are also not transmitted to any of the offspring. For three patients affected with cancer, 97 parents (who yet have a cancerous relative) and 97 children go free." The disease is primarily a local one. Mr. Moore does not deny altogether that the disease is hereditary, but he believes that it is only rarely so. That there is a previous diathetic condition, or a disposition in the economy, which may determine the first formation of the tumor, Mr. Moore also admits, in accounting for those cases where cancer has appeared to originate from a blow. He quotes Broca, who says, in reference to such cases, that "here we must admit the existence of a previous disposition in the economy before the local accident which determined the formation of the tumor; the diathesis hovered as it were over the organism." He expresses his concurrence in these views.

Mr. Moore argues, further, that the disease can always be traced to a period when but one tumor existed; that the spread of the disease is a mechanical one, its apparent re-

* "Treatment of Cancer of the Uterus."—*Amer. Journ. of Obst.*, April, 1882.

† *Brit. Med. Journ.*, August 20, 1865.

appearance in the same place after removal being probably due to an imperfect operation; that its appearance in internal organs after complete removal of the primary tumor does not prove that it originated of itself in such internal organs *after* the operation; that while in a few instances the hereditary character of the disease is well marked, in the great proportion of cases it is a personal disease, and not capable of transmission.

The arguments used by Mr. Moore are worthy of attentive consideration. It appears evident that the hereditary character of the disease is not so commonly substantiated as has been supposed, while in a few instances (three per cent of the cases) this hereditariness was extremely well marked. When hereditary, the disease appears to gather intensity as it descends, for it appears earlier in the daughter than it did in the mother, earlier still in the grandchild. Mr. Moore's belief that cancer for the most part originates in strong rather than tainted constitutions may be true in one sense of the word. The individual may be *apparently* strong and healthy, but not strong and healthy *quoad* the liability to this disease. It is quite true that at present we are unable to point out what it is that distinguishes an individual about to develop cancer from another who is to be free from it; but the advance of medical science will, it is to be hoped, clear up this important point. One thing is evident, the great necessity for the early detection of the disease, facts being in favor of the idea that if we could more frequently be made aware of its existence, there might be a fair chance of doing the patient much good in a considerable proportion of cases.*

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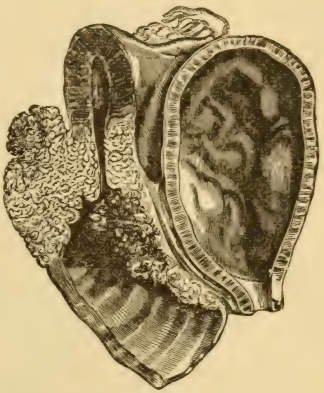
* With respect to the effect of removal of a cancerous tumor on the duration of life, Mr. Birkett's facts are of great interest. The seat of the cancer was the breast. Of 150 patients who had it removed there survived—

Under 1 year	8	Above 10 years	2
Over 1 "	24	" 11 "	2
" 2 "	38	" 12 "	1
" 3 "	17	" 13 "	1
" 4 "	21	" 14 "	2
" 5 "	7	" 15 "	1
" 6 "	5	About 23 "	1
" 7 "	10	" 29 "	1
" 8 "	4	" 32 "	1
" 9 "	4		

Whereas of 100 patients not operated on there died within first year, 14; survived 10 years, 3; of these, 2 about 26 years; the average duration of life being about 3½ years.—*Brit. Med. Journ.*, Sept. 29, 1866.

The antecedent condition of system in the cases which have fallen under my own notice has been various. In some, the individual was in apparently good health, but in many the state of things was the reverse. Prolonged anxiety, depression of the general health, and an evidently low state of vital power, I have certainly been induced to regard as rather frequent antecedent conditions. Great debility and prostration from prolonged and excessive lactation has been apparently connected with the occurrence of uterine cancer in several instances under my own observation. But the facts and statistics before related as to the influence of the married state, the effects of intercourse, and the effects of lacerations or injuries of the cervix uteri due to child-birth are of exceeding importance, and further inquiries will doubtless elicit much additional valuable information on this very interesting subject.

FIG. 183.*



In reference to the influence of *heredity* Dr. Fordyce Barker† of New York found that in only 7·3 per cent of 487 cases of uterine cancer was the hereditary influence proved to exist.

Varieties of Cancer.—The form of cancer usually witnessed in the uterus is the medullary cancer. The "epithelial" comes next in order of frequency.‡ The medullary form of cancer attacks, in common with other forms of cancer, the lower part of the uterus, first, in by far the majority of cases. The epithelial form is witnessed in the superficial and exposed portion of the cervix uteri, and it has been known ever since the name was given to it by Dr. John Clarke, as the "cauliflower excrescence of the os uteri." It does

* Fig. 183 (from Martin's Atlas) represents the uterus and vagina affected with cancer.

† New York Academy of Medicine, Feb. 17, 1879.

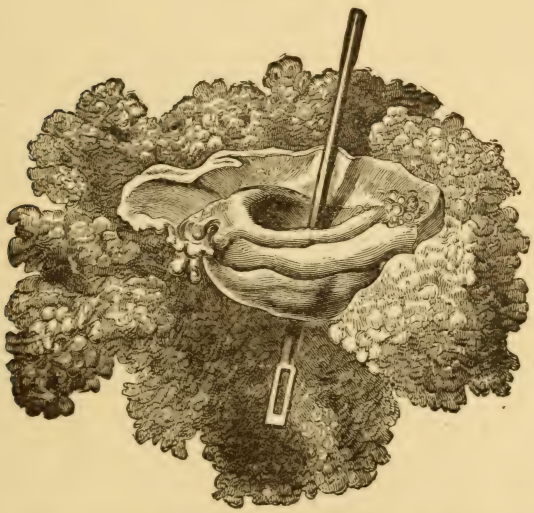
‡ An excellent account of the *post-mortem* appearances in 58 cases of uterine cancer, by Mr. Henry Arnott, will be found in the "Path. Trans.," for 1870.

not appear that, so far as the anatomical part of the question is concerned, the two diseases differ essentially; we find in both, on microscopic examination, cells and formations, which equally indicates the presence of cancer. The difference in the physical characters, evident to the touch and the unassisted eye, in the two varieties of the disease, appears to depend on the different anatomical arrangement of the tissues affected in the two cases. So that a case of cauliflower excrescence is one in which the cancer attacks simply the surface of the cervix uteri; but a case of cancer of the medullary form is one in which the disease attacks the tissues of the cervix more deeply, producing a very noticeable *hypertrophy* of the parts affected in the first instance, which spreads into and invades the adjacent parts, including the free surface. The two frequently exist together; it being a matter of common observation, that in patients with the cauliflower excresence, although the disease may appear limited to the os for a time, the medullary form of the disease generally afterward attacks the uterus and thus causes death. In the cauliflower excrescence (see Fig. 184), the villi covering the cervix become hypertrophied, the vessels with which they are supplied exceedingly enlarged, and forming loops; each villus is found to contain cells of every form: nuclear, formative, caudate, mother-cells, spindle-shaped or nucleated fibres, and binucleated cells, also cells in a state of fatty degeneration. A thick layer of epithelium covers the whole. The cauliflower excrescence thus owes its shape, textures, etc., to the original configuration and relations of the villi covering the cervix uteri. The microscopic appearances in the other class of cases it is unnecessary to allude to.

The characters of the *cauliflower excrescence of the os uteri* are as follows: From the greater part or the whole of the circumference of the os uteri a somewhat soft granular mass grows downward into the vagina, at the centre of which is the aperture of the os, and above which is felt a narrowed constricted portion, the junction of the vaginal portion of the cervix with the vagina. The size varies. The more usual circumstance is that it escapes detection at an early period of its growth, owing to the symptoms at first produced being slight; and when first discovered it may be so large as to fill the upper part of the vagina. It may grow to such a size as to reach to the ostium vaginæ. Ordinarily, the growth consists of several portions, each of which is

lobulated in shape, and separated by a fissure from the adjacent portion. One lip of the os is usually larger than another, and sometimes it is not at first easy to distinguish the orifice of the os between the mass of tumors in question, some of which may be as large as an apple, others smaller, but all attached to, and continuous with, the margin of the os uteri. If the patient be examined at an early stage of the growth, the os is found slightly puffed out, softer than usual, and presenting a granular feel. If the examination be made at a later stage of the disease, the

FIG. 184.



vagina may be found filled and distended by a large spongy mass. At a still later period the growths may have partly disappeared, having ulcerated away, and then the os uteri may present the changes met with in the ulcerative stage of ordinary cancer of the uterus, together with those just mentioned. And in not a few cases when the patient is for the first time examined, it is found that while presenting well-marked tumors of the cauliflower kind, the cervix itself is hardened, greatly thickened, and the uterus more fixed than usual. We may find that above the situation of the excrescences, the cervix uteri forms a pedicle compara-

tively healthy in structure; the pedicle may, however, be very short, and hardly to be felt. It not unfrequently happens that growths similar to those proceeding from the os uteri are found situated on the vaginal walls, in proximity to the os uteri.

The cauliflower excrescence of the os uteri is soft to the touch, unless under the constricting influence of astringent injections; it has a peculiar granular feel, bleeds easily when touched, or after intercourse, sneezing, or straining; and an almost constant symptom is the presence of a copious watery, and latterly fœtid, discharge from the vagina. The drawing (Fig. 184, after one in Sir J. Y. Simpson's Lectures) represents a large mass of this kind and its relation to the os uteri. The characteristics of this condition are physically those above stated; the one on which most reliance is to be placed diagnostically is the origin of the mass from *all*, or the greater part of, the circumference of the os uteri. The soft pulpy mass may give to the finger a sensation like that experienced on touching the os uteri in cases of placenta prævia, but the other circumstances would hardly admit of the two conditions being confounded.

Fig. 185.

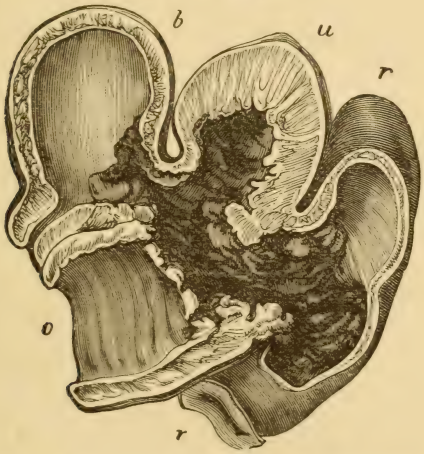


The symptoms of this disease are frequently very indistinct at first. The distinctive signs, watery offensive discharge, occasional bleeding, etc., may not show themselves early in the disease, or, if observed, they may be so slight as not to attract particular attention, and thus a considerable time may be lost before the disease is detected, or its presence even suspected.

Another form in which cancer may be found growing from the os uteri is the *medullary tumor*. From it the cauliflower excrescence is distinguished by its regular and extensive attachment or departure from the os, the medullary tumor growing from one side or other of the cervix, and being more or less pedunculated; by its granular structure, that of a medullary tumor being more consistent, and firmer, and lobulated; and by the progress of the case,

which advances much more rapidly to a fatal termination when the tumor is a medullary one. These medullary tumors have a surface more firm and even than that of the cauliflower excrescence, but not so firm as that of a *fibrous polypus* projecting into the vagina. From the latter tumor it would also be distinguished by the nature and the mode of attachment, the pedicle of the polypus being surrounded by the os uteri, whereas the medullary tumor grows from the side of the os, and not from the interior of the uterus. Profuse hæmorrhages, fœtid discharges, etc., may be observed equally in cases of medullary tumor

FIG. 186.*



and of polypus. In those cases of polypus where the tumor is so large as to fill the vagina, or where the surface of the mass is apparently or actually adherent at the os, the diagnosis might be attended with difficulty. The presence of a large medullary mass growing from the os uteri is not, it must be remarked, a common phenomenon in cases of cancer of the uterus. The drawing (Fig. 185) represents a tumor removed by me in University College Hospital, June, 1866. On microscopic examination it proved to be malignant, although smooth and tolerably hard. The patient

* Fig. 186 (from Dr. Arthur Farre) shows the bladder, uterus, and rectum simultaneously affected with cancer.

subsequently (Feb., 1867) appeared again, and the uterus was then affected with carcinoma.

When cancer attacks the surface *alone*, it appears that it may be for a very considerable time restricted to that part, though this is rare. The most common event is that the disease attacks simultaneously the superficial and the deep parts of the cervix uteri, with the result that there is cauliflower excrescence of the os and infiltration with medullary cancer of the cervix itself. In some rather rare instances, however, while the cervix remains apparently sound and healthy, an insidious invasion of the upper part of the uterus, by carcinomatous deposit, occurs. Dr. West met with this affection in two out of 120 cases of uterine cancer. Sir J. Y. Simpson stated that about two cases out of 30 of cancer of the uterus are of this kind. The deposit may be observed in the outer layer of the middle coat of the uterus, or in the sub-peritoneal or peritoneal coat; or attacking the whole thickness of the uterine walls; or in the mucous or sub-mucous coat of the body or fundus uteri. In both of Dr. West's cases "the enlargement of the uterus was very considerable; in one it measured six inches in length, and in the other was nearly as large as the adult head." From the uterus the disease spreads to the adjoining tissues at the upper part of the vagina; the glands in the pelvis become affected. The bladder is not seldom involved (see Fig. 186), one result being vesico-vaginal fistula. Not long since I saw a lady in whom the uterus had apparently become blocked up by extension of the disease to the fundus of the bladder, death resulting apparently from rupture of the dilated ureters into the abdomen. The disease may extend into the rectum; all these organs—the vagina, bladder, and rectum—may be found in communication with each other in consequence of the ulceration of the cancerous infiltration. Indeed, the condition to which the unfortunate patient may be reduced by this dread disease is often as deplorable as it is possible to conceive. Death itself is preferred to the continuance of such unmitigated and unrelievable distress.

*Sarcoma of the Uterus.**—Under the terms "sarcoma of the uterus" (Virchow), "recurrent fibroid tumor of uterus" (Hutchinson), has been described a peculiar disease of the

* In the chapter on Fibroid Tumors this affection has also been in part described under the term "recurrent polypus."

uterus of a malignant, or certainly quasi-malignant, character, consisting in the formation of a growth within the uterus, gradually expanding the organ, and protruding finally at the cervix. Professor Alex. R. Simpson of Edinburgh has published a valuable monograph on the subject.* He describes four cases of his own, and presents accounts of a total of forty-eight cases. The peculiarity of the growth is, that, notwithstanding an apparently complete removal, it is liable to recur. The general history of such cases resembles in some ways those of fibrous polypus of the uterus—there is hæmorrhage, profuse leucorrhœa, etc. But in sarcoma of the uterus there is generally also pain more or less severe, and such as is generally observed in cases of cancer, and an offensive odor of the discharges. Cases have been related in which the growth has been removed three or four times, with relief for a time, the disease recurring and proving ultimately fatal nevertheless. A curious feature in four of the cases collected by Professor A. R. Simpson was the complication of inversion with the sarcoma. Dr. Gaillard Thomas † has observed four cases. He considers the disease intermediate between myofibroma and true cancer. The growth is slower than that of cancer. The prognosis is always unfavorable.

I have myself seen an undoubted case of sarcoma. The uterus was found to be much enlarged and filled with a soft pultaceous yet consistent mass, which had to be removed by means of a tablespoon from the interior of the uterus. The patient was a widow, æt. 55. Three operations were performed in this case at intervals of some months. Finally death occurred, and the uterus seemed almost to have disappeared, the disease having extended to the rectum.

It appears probable that these cases of sarcoma of the uterus have the same relation to cancer of the body of the uterus as epithelioma of the cervix has to medullary cancer of the cervix. A pulpy soft mass grows from the uterine mucous membrane—is probably a degeneration of this—forms a tumor *in utero*, and later on the disease attacks the uterine wall itself.

The *general symptoms* of uterine cancer vary according to the stage of the disease. Ordinarily there is pain, seated

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* "On Sarcoma Uteri."—*Edin. Med. Journ.*, Jan., 1876.

† *Amer. Journ. of Obst.*, vol. vii., p. 45.

in the uterus or near it, and more or less constant; but by no means invariably. It is yet a question whether such pain actually precedes the development of the tumor; probably it does in the majority of cases. The disease progressing, the patient becomes evidently ill; she has a peculiarly worn expression in many cases, but not always; the tint of the skin is often sallow,* but chiefly where there have been frequent losses of blood. Later on the patient suffers from indigestion, often exceedingly intractable in form: vomiting or nausea is not rarely witnessed. Hæmorrhage is common (see p. 51). Sanious, watery, puriform, or offensive discharges, almost invariably present at some stage or other of the disease, are signs also of great importance.

Duration of Cancer of the Uterus.—Lebert gives an average of sixteen months; Dr. West fifteen months. Hence, in a given case, if we are informed that the patient has been subject to irregular (*i.e.*, non-periodical) hæmorrhages for upward of two years, this fact would be against the probability of the hæmorrhage being due to cancer uteri. Sir J. Y. Simpson's experience led him to fix a longer period as the ordinary duration of cancer uteri. "Patients usually die in from two years to two years and a half after the detection of the disease," says this author.† According to the same authority, where the disease occurs in aged persons, and has taken on a slow and senile character, its course may be very protracted. In Dr. Fordyce Barker's cases (New York) the average duration in 26 instances was three years and eight months.

As regards the fatality of uterine cancer, the general custom has been to take an extremely gloomy view of them, and to consider such cases hopeless in so far as recovery is concerned. Dr Barker, in the paper before quoted, gives facts observed by himself which encourage a somewhat less hopeless view in certain cases of this disease. He says that in one case eleven years had elapsed since he made the diagnosis of uterine cancer, the patient still evidently suffering from the disease, but able to go about. He states that he has removed the cervix for epithelioma in 11 cases, 9 of which recovered and have remained well. In one case recovery from uterine cancer occurred after repeated use of the actual cautery. In another a free application of the

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* See Examination of Os Uteri.

† *Med. Times and Gaz.*, Jan. 15, 1859.

acid nitrate of mercury was followed by complete and persistent cure.

When the body of the uterus or the tissues of the cervix are affected, and have begun to ulcerate, the disease usually progresses rapidly. How long the stage previous to this may last we have no direct evidence. When the surface of the os only is affected (cancroid or cauliflower excrescence), the disease is by no means so quickly fatal. One of the most valuable facts in reference to this question is given by Sir J. Y. Simpson in his "Lectures on Diseases of Women." The patient, the subject of the case, had a large cauliflower excrescence the size of an egg removed eighteen years previously. Since that period she had had five children, and was still alive. With reference to this case it should be stated that no "caudate or spindle-shaped bodies" were found in the tumor removed.

Cancer of the Vagina.—Cancer of the vagina is far less frequently met with as a primary affection than cancer of the uterus. But the disease is now and then met with here primarily. It invades the vagina not unfrequently by extension from above. Thus in 54 cases of carcinoma uteri observed by me in hospital practice, the vagina is noted as being affected as well as the uterus in 11 cases. In some of these 11 cases it appeared as if the disease had begun in the vagina. In one case in private practice the vagina was very extensively affected, while the uterus gave very little indication of participating until later on.

The disease occurs (when primary or secondary) as an infiltration in the vaginal wall, or it may begin as a papillary growth of villous character on the free surface. By the finger the physical condition discovered may thus vary exceedingly. The vagina may be so blocked up that the passage of the finger at its entrance is very difficult indeed. The bladder or rectum becomes later on perforated or not according to circumstances. Another effect is that the ureter on one side may become so compressed that the functions of the corresponding kidney are arrested.

Diagnosis in the Early Stage.—The diagnosis of cancer of the uterus, in its early stage, from certain other conditions which may produce somewhat analogous physical alterations in the os and cervix uteri, and which may give rise also to symptoms more or less resembling those witnessed in the early stages of this justly dreaded disease, is a matter of the utmost importance. A fissured, irregular, indurated,

and enlarged condition of the vaginal portion of the uterus and of the lips of the os may proceed from a variety of causes. In *women who have had children*, the os uteri is generally more or less fissured, giving the portio vaginalis a sort of lobulated feel; the number of fissures and lobes varies from three to four, five, or six; and in women who have had severe labors, rendering the use of instruments necessary, the os may be found very deeply fissured, the parts having been torn during labor. If the uterus be healthy, however, there is no marked enlargement of the part—on the contrary, there is a tendency to a diminution in its size, the diminution being more marked as the patient becomes older. The fissured condition of the os uteri is thus quite compatible with health. When, however, in addition to this, the lips of the os uteri are indurated and larger than usual, the whole vaginal portion participating in this condition, it is indicative of disease. It may be due to the comparatively harmless *hypertrophy of the uterus* (generally synonymous with defective involution of the organ after childbirth), to a *chronic inflammatory condition of the cervix*, to *fibrous tumors* in the walls of the uterus, to *carcinomatous deposit* in the substance of the portio vaginalis—the latter being the first in a series of changes which may result in the death of the patient at no distant period—to *tuberculous affection of the cervix uteri*, or to *small fibrous tumors* in the portio vaginalis. The diagnosis between these several conditions is often one of great difficulty, and is only arrived at by an attentive consideration not only of the physical signs themselves, but of the attendant phenomena, and of the present and past general condition of the patient.

Dr. Henry Bennet, whose searching analysis of the abnormal conditions of the os uteri in relation to the diagnosis of cancer cannot be too highly spoken of, and who first laid down exact rules for the diagnosis of cancer from a condition with which it was formerly very frequently confounded — viz., chronic inflammatory induration — has accurately pointed out some of the diagnostic points in reference to the question now at issue, in the following words:

"When the lobular, knotty, irregular condition of the cervix is the result of laceration, and is simply inflammatory, the fissures which separate the lobes radiate round the cavity of the os on a centre, which is not the case in a cancerous tumor—each separate lobe being perfectly

smooth in itself, and free from tubercles or superficial inequalities." *

The mere *size* of the lobules indicates nothing of malignant character, provided they be tolerably smooth; the depth of the fissures is of favorable import also when the lobules are smooth. Extreme hardness is often observed when there is no serious disease. Uniformity in the degree of the hardness of the lobules is favorable. Slight excoriation of the surface of the lobules is quite compatible with simple inflammation, or similarly innocuous conditions. A deeply *excavated* ulcer on some portion of the surface would excite apprehension as to the cancerous nature of the enlargement. When the lobulation and enlargement are limited to one side of the os, this may be due to growth of a non-malignant tumor in the substance of the cervix. The smoothness of the tumor, the absence of general signs of disease, absence of bloody and offensive discharges, would generally, but not always, put suspicion of cancer on one side. A quickly growing lobular enlargement of one lip of the os uteri is probably malignant in character.

Time is of importance in the diagnosis of these cases. An induration and enlargement of the os uteri which is known to have existed for some years may be generally pronounced to be non-cancerous.

Negatively, the points now alluded to are of great diagnostic value. Thus, supposing the patient to be suffering from pain, offensive discharge, occasional hæmorrhages, etc., and suspecting herself to be the subject of cancer, a very simple examination might, by revealing an absence of all induration or enlargement of the os uteri, render it almost certain that the case was not one of cancer. The rare occurrence of cases in which the disease begins in the fundus uteri prevents this rule being quite absolute.

Unquestionably the most important, and perhaps the least fallacious, guide to the diagnosis in a doubtful case, is the mobility or immobility of the uterus—a point which has been already alluded to; and when the uterus is found to be as movable as usual, while there is an absence of induration in the cellular tissue before and behind the cervix uteri, no considerable pain, no offensive discharge, no particular constitutional derangement, we may safely conclude that the case is not one of cancer. The immobility

* "On Inflammation of the Uterus," 4th ed., p. 90.

due to pressure of tumors within the pelvis must not be confounded with the condition produced by cancerous disease of the uterus itself. Lastly, it must be recollected that mobility of the uterus is not necessarily and always lost, even in advanced cases of cancerous disease, although as a rule it is so lost.

With all the helps to diagnosis which have been mentioned, several cases will remain of which it may be for some time difficult to determine the true nature, and to say whether the diseased condition of the cervix be of malignant or non-malignant character. The inequality of the induration is generally an indication of malignant disease. Again, the fissures which separate the lobes of the os may be at an early period of the disease smooth at their edges, as in the non-malignant form; but they soon assume a sharply distinct shape. Hæmorrhage from the generative organs is a symptom of cancer usually observed at an early period, but hæmorrhage may be entirely absent, the catamenial discharge only being slightly increased. The value of "hæmorrhage" as a symptom of cancer has been discussed at p. 51. Another symptom, also early observed, is pain in the uterine and lumbar regions—not merely discomfort, but actual pain. Weakness and general debility may be observed also from the very commencement. The importance of time has been alluded to, and much aid will be derived from observation of the progress of the case in making a diagnosis. Thus, if a thickened, fissured, indurated condition of the os uteri have existed in a particular case for a considerable time, say twelve months, and no particular disturbance of the general health be observed, it is highly probable that the affection is not malignant. It is not in the nature of cancer affecting the substance of the cervix uteri, and giving rise to physical changes such as those described, unless under very exceptional circumstances, so long to delay its progress.

The possibility of laceration of the cervix uteri, leading to cancerous degeneration of the os, must be kept in view in forming a diagnosis. If, as is believed by eminent American authorities, such lacerations are often forerunners of cancer of the uterus (particularly the epithelioma of the cervix), a lobulated and deeply fissured condition of the os associated, would be naturally carefully scrutinized. Dr. W. H. Baker *

* *Amer. Journ. of Obst.*, April, 1882.

says: "I know no more frequent cause of cancer of the cervix uteri than the persistent irritation to which the everted lips of a lacerated cervix are exposed; and if the only thing to be gained by Emmet's operation for the repair of such a condition were to diminish the tendency to the establishment of this disease (cancer of the uterus), I would perform it in every instance where the rupture was sufficient to allow any eversion."

In the diagnosis of cancer at an early period, Dr. Montgomery laid particular stress on a shotty condition of the margins of the os, associated with turgidity, and with a crimson discoloration of the os tincæ generally. In the first stage of cancer of the uterus, Dr. Bennet states that he would expect to find "shot-like, pale, indolent indurations, all but insensible to pressure, strewn irregularly over the cervix, or an irregular hard tumor similarly characterized developed on its surface." In a case related by Becquerel* there was a small, hard, violet-colored tumor, projecting from the surface of the cervix at a very early stage of the disease. It was unequal and nodulated. The condition of the os in the early stage of cancer in a few cases in which I have had the opportunity of getting accurate information on this point was as follows: Nodular irregular eminences, the mucous membrane covering them having a deep or livid blue color, and contrasting with adjacent structures not yet affected with induration and irregularity of contour. This applies to cases of cancer commencing in the substance of the os uteri, and not to cases of cauliflower excrescence when the disease attacks primarily the papillary structures on the surface.

The largely patent condition of the orifice usually present in cases of cancer is not peculiar to it, as already remarked.

A fœtid discharge from the vagina is too often looked upon as indicative of cancer. Wherever there is hæmorrhage, there may be fœtid discharge due to decomposition of clots of blood which have been detained.

There may be a healthy condition, or a comparatively healthy condition at least, of the os and cervix uteri, and still cancer of the uterus may be present, the disease being confined in some rare cases to the body or fundus uteri. In such cases, a digital vaginal examination might reveal little or nothing. If the patient present constitutional signs, like

* "Traité Clin. des Maladies de l'Uterus" (Paris), tom. i., p. 321.

those of cancer, with occasional hæmorrhages, profuse and continuous fœtid discharges, watery or purulent, while no alteration of the os and cervix is revealed by examination, cancer of the fundus uteri should be suspected. The upper part of the uterus is generally much enlarged in such cases, and may be felt so enlarged above the pubes.

In conclusion, it should be borne in mind that the condition of the os and cervix, to which the previous remarks apply, is one simply of induration, slight enlargement, and lobulation. Ulceration, marked loss of substance, associated with hardening, etc., is a condition to which the remarks in question are not at all applicable.

Irregularity, unevenness, etc., in different parts of the vaginal portion, may be due to *small rounded tumors* embedded in the tissue of the cervix. Such tumors, which are of fibrous character, might give rise to suspicion of cancer, from the fact that one side of the cervix would under such circumstances be hard or nodulated, and the other side soft and natural. These tumors are, however, very rare: they are of slow growth, give rise to little inconvenience, and never to grave symptoms, such as are observed in cancer.

Tuberculous enlargement of the vaginal portion is a condition of exceeding rarity. It is characterized by tumors of uncertain size, of rounded form, at first firm, afterward softer, yielding to the pressure of the fingers, and indistinctly fluctuating; always accompanied by considerable engorgement of the cervix uteri. It is a condition due to masses of tubercle yet unsoftened, to tubercular infiltration, or to inflammatory action attendant on softening.* Occasionally are seen small yellow deposits on the surface of the cervix the size of a split pea, or smaller, and giving issue, on being pricked, to a small quantity of matter of the consistence of pus. These deposits, which have been alleged to be tuberculous, Dr. West, the accuracy of whose description of them I can quite confirm, looks upon as due to hypertrophy of the Nabothian follicles.

Practically, the importance of the question at issue is not great. The existence of tubercle of the cervix is denied by Rokitansky; it is certain that tubercular infiltration of the cervix with tubercular softening, etc., is very rare. I believe, however, that in women of tubercular tendency, and in whom the cervix uteri is sometimes found enlarged, hy-

* Roberts's description, quoted by Dr. West, *op. cit.*, p. 362.

pertrophied, and indurated, this enlargement is of tubercular origin, though, anatomically speaking, there may be no deposit of tubercle. I have in private practice seen cases which might be referred to this category. This is a point which is, however, more interesting in connection with the subject of treatment than that of pathology.

Diagnosis in the Later Stages.—The condition of the parts

FIG. 187.*



characterized by *irregular enlargement, induration, destruction, and loss of substance of the vaginal portion and of the lower part of the uterus, all more or less combined,* is that present in the ulcerative stage of cancer of the uterus; and it is a condition which is so characteristic that it can hardly be mistaken for anything else. The degree to which the destruction of substance is found to have proceeded varies very much. The os uteri may be found to have lost its natural shape, or

* Fig. 187 represents carcinomatous infiltration of the posterior lip of the os uteri, also ulcerative destruction of the anterior lip.

the vaginal portion has wholly disappeared, and the finger passes into an excavation with hard irregular walls, which are constituted by the remains of the vaginal portion, or by the carcinomatously infiltrated cellular tissue at the upper part of the vagina. Above is felt a hard irregular mass, the somewhat enlarged uterus, fixed and immovable, and not easily definable from the surrounding hardened structures. A not unfrequent condition of the os uteri in cancer is a hard, smooth, sharply-defined surface, just as if a piece had been actually removed by the knife, leaving the edges well marked. Such a condition is represented in Fig. 187, showing at one part of the os nodular projections, at another the peculiar condition just described. "When you feel," says Sir J. Y. Simpson,* "a rough, irregular, excavated or anfractuous ulcer seated on a hardened base, and surrounded by hardened tissue, cancer is present." The process of ulceration may be found to have extended to the rectum, in which case fæces and flatus pass from the vagina to the bladder, occasioning involuntary micturition; or to both. In the latter case the rectum and bladder open into the common cloaca, resulting from the destructive process which has now been going on. The destructive process may have affected one side only of the os, the other only being as yet enlarged, and denser and firmer than usual. It is not uncommon to find fungous softish masses, which bleed when touched, growing from the already ulcerated surface. This ulcerative stage of the disease is almost universally characterized by an offensive leucorrhœal discharge, this discharge becoming tinged with blood after examination or after exertion. There is a general failure of the strength of the patient, emaciation, want of sleep, and disturbances of the digestive organs, shown by nausea, vomiting, etc., and, what is important, there occurs from week to week perceptible increase in the intensity of these symptoms, often a very rapid one; the skin of the patient has in some cases a remarkable straw-colored tint, there are lancinating pains, severe in character, felt in the uterine region; at this period, also, pains depending on pressure of the enlarged uterus on the nerves in the pelvis are very commonly observed, viz., pains along the course of the sciatic and other nerves. Other symptoms attending this stage of the affection are, pains in the breast, and, not seldom, increased

* *Med. Times and Gaz.*, Jan. 15, 1859.

sexual desire. The occurrence of "hæmorrhages" and of "offensive discharges" are characteristic, but the value of these as signs of cancer has already been discussed (see p. 111, vol. ii).

With reference to "cachexia" as a means of diagnosis, Mr. Sibley, in his valuable "Contribution to the Statistics of Cancer,"* makes some important remarks.

"The cachexia," says Mr. Sibley, "is closely proportionate to the amount of hæmorrhage, discharge, and pain. In cases where there is but little hæmorrhage, and a small amount of discharge, the cachexia is hardly obvious, and this is usually observed even where the cancerous tumor has attained great magnitude. It sometimes happens that the cachexia becomes well marked, even where there is but little hæmorrhage or discharge; but in these cases the cancer is usually found to have involved some important internal organ, and to have interfered with some vital function. On the other hand, in those patients with whom there is profuse discharge, and frequent attacks of hæmorrhage, the wasted, sallow visage of advanced cancerous disease becomes obvious at an early stage of the complaint. In no class of cases is the cachexia more pronounced than in uterine cancer." And he has come to the conclusion that "the presence or absence of cachexia is valueless as an aid to diagnosis. It appears to be the result of a local disease, and is not to be regarded as evidence of a state of system which leads to the production of cancer."

In a few rare cases destruction of the uterus by cancerous ulceration progresses to a very advanced stage, all the usual symptoms of cancer—pain, offensive discharge, hæmorrhages, constitutional affection—being entirely absent. When cancer of the uterus in the ulcerative stage is present, the diagnosis is not usually difficult when digital examination is practiced, those rare cases excepted in which the lower part of the uterus is sound, or apparently so, there being cancerous disease of the interior of the body of the uterus. In these cases, the result of the ordinary digital examination would be liable to mislead, unless corrected by due attention to the more obvious and symptomatic signs of cancer.

The diagnosis of cancer of the uterus advanced to the stage of ulceration, and presenting to the touch the phys-

* "Med. Chir. Trans.," vol. xlii., p. 194.

ical characters above described, is not a matter of difficulty; the difficulty lies, and especially with those whose sense of touch is uneducated, in determining that cancer is *not* present. Thus a patient may present herself suffering a good deal from pain, who is the subject of profuse menstruation, of a profuse discharge, which is, she states, occasionally "unpleasant" to the smell. On digital examination of the os uteri, a decided enlargement and hardening is felt at one part, and a softer velvety surface at another. But the hardness and induration may be due, as already pointed out, to simple hypertrophy, inflammation or congestion of the vaginal portion: the feeling of the presence of a softer portion may be produced by the inner surface of the os, with its lining in a hypertrophied, shaggy, and villous state.

A peculiar form of destructive ulceration of the cervix uteri has been in a few rare cases observed, all that has been met with on examination being *loss of substance.* The lower part of the uterus has disappeared, and in place of the cervix there is a rough, irregular border, above which the body of the uterus, movable as usual, is felt by the finger: there is an "absence of any thickening, hardness, or deposit of new matter in its vicinity," as in carcinoma (West). This condition is described as *corroding ulcer of the os uteri.* The symptoms in cases of this description are not distinctive. Recent writers do not confirm the observations of Sir C. M. Clarke, that the pain is peculiar in these cases. So far as the results of digital examination are concerned, corroding ulcer is characterized by absence of induration in the neighborhood, by absence of fixation of the uterus, and by the sharpness of the margin of the ulceration. It is an interesting fact that corroding ulcer differs from cancer in respect to its fatality and duration. The observations hitherto made appear to indicate that the disease may continue for some years, indeed for several years. Dr. West believes that the affection ought to be classed with rodent ulcers. On the whole it appears right to consider it a form of cancer.

The diagnosis of the *cauliflower excrescence of the os uteri* and of the *medullary tumor of the os uteri* will be gathered from the description of the physical characters of these conditions at p. 264.

Use of the Speculum in the Diagnosis of Cancer.—But little advantage can be derived from the use of the speculum in cases of advanced cancer of the uterus, the diagnosis of

which, by the aid of digital examination alone, is not usually attended with difficulty; and, unless employed with great care, the use of the speculum may, under such circumstances, occasion hæmorrhage, and produce mischief of other kinds.

When, however, the os uteri is found on digital examination to be indurated and irregular, and when there is doubt as to whether cancer in its first stage may or may not be present, the use of the speculum may be the means of resolving that doubt. The physical condition of the os and cervix uteri, as felt by the finger, in the early stage of cancer, has been already fully described; it only now remains to give an account of the appearances presented to the sight in such cases.

Respecting the *color* of the surface in induration due to cancer, there is a difference of opinion; and this arises from the fact that the first stage of cancer of the uterus so very rarely comes under observation. Supposing cancer to be present, and the ulceration to have only just commenced, the ulcer will be found to have peculiar characters; it is excavated and depressed below the surface, the edges irregular, jagged, and somewhat tumid, and sharply defined. In chancre, the ulcer is distinguished by its being more superficial, by the absence of enlargement, and induration of the tissues beneath and around, by the absence of general signs of cancer, and by the effects of anti-syphilitic treatment.

Judging by ocular inspection alone, there are undoubtedly cases in which difficulty might occur in deciding between cancerous ulceration and ulceration due to other causes; but it cannot be too frequently repeated that it is by combination and comparison of the general and particular data that a diagnosis must be arrived at. In the case of suspected cancer, more can be learned from digital examination than by the most careful use of the speculum.

The appearances presented by the os in cases of *cauliflower excrescence of the os uteri* are described by Sir C. M. Clarke as follows: "There is a striking resemblance between itself and a portion of the upper surface of a cauliflower or a head of brocoli. The surface is granulated, and it consists of a great number of small projections, which may be picked off from the surface as the granules may be detached from the vegetable." The surface, as seen by the aid of the speculum or otherwise, is of a bright red color.

It is very delicate, and the least touch sometimes suffices to make it bleed. Hence, if the speculum be used, great care must be exercised not to injure the surface. A digital examination affords most conclusively the desired information.

TREATMENT.

The *medical* treatment of cancer of the uterus has hitherto proved a failure; Mr. John Clay's remedy, one of the most recent of the medicines recommended, Chian turpentine, having proved to have little or no efficacy after an exhaustive trial in the wards of the Middlesex Hospital.*

In regard to preventive treatment, up to a recent date nothing of a practical character had been suggested. It appears, however, probable that in the future lacerations of the cervix may be considered sufficiently important as possible causes of cancer to induce the practice of repairing such injuries, if for no other reason. It is the fact, at all events, that in America one of the reasons for repairing such lesions is the probability of preventing the occurrence of cancerous disease of the os uteri by the operation in question (see p. 258). It must be conceded, at all events, that a raw, imperfectly healed surface, exposed continually to friction, and in a more or less constant state of irritation, presents a condition likely to favor the origination of a morbid or special nutritive action such as is observed in cases of cancer.

Respecting the treatment of cancroid of the uterus (cauliflower excrescence), most authorities are agreed as to the propriety of removing the diseased structure when the disease is limited to the os uteri, and the uterine tissue above is not affected. Those cases are most favorable for operation where the vaginal portion—at its junction with the vagina—is not thicker than usual, and where consequently the tumor alone constitutes the disease. The operation may be done also where the cervix is a little enlarged; here the prospect of arresting the disease would be a small one, and the benefit of the operation would be temporary. That the disease may be arrested by amputating the cervix has

* For Mr. Clay's paper on the "Treatment of Cancer of the Uterus by Chian Turpentine," see *Lancet*, March 27, 1880. See also "On Chian Turpentine and its Uselessness in Cancer," by Henry Morris, M.B. (*Lancet*, Nov. 27, 1880), in which paper are related twelve cases treated by it without benefit at the Middlesex Hospital.

already been stated. In other cases, while the patient derives advantage from the operation for a time, the disease attacks the body of the uterus a little later. In many cases cancroid of the os is not recognized until the disease has already spread to the body of the uterus; in some of these cases even temporary alleviation of symptoms follows removal of the decomposing and discharge-secreting mass which is filling up the vagina.

As a palliative measure frequently, as a curative measure occasionally, amputation of the cervix uteri in cases of cancroid of the os uteri is a valuable operation; it may prevent a fatal result altogether, it will almost certainly postpone that fatal result, even when inevitable. The bleeding and the copious exhaustive discharge are at once arrested. The patient would die, or might die, from continuance of these; and, for a time at all events, this source of danger is removed, and comfort and ease are secured to the sufferer.

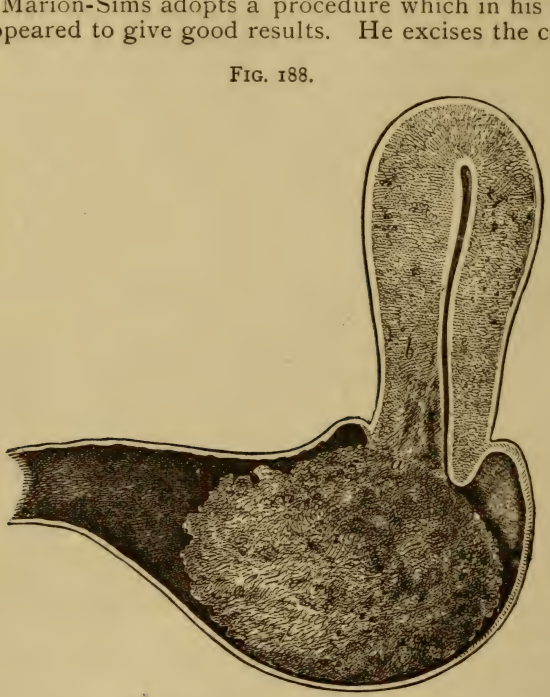
The écraseur is the best instrument for the operation. The chain or the wire rope may be used; the latter is best when the pedicle is a short one, or when the uterus is fixed. The scissors are preferable to the knife if the écraseur cannot be employed. The galvano-cautery is a valuable means of removing the cervix in such cases. As pointed out by Byrne and Goodell, the wire should not be made too hot, and the removal should be effected slowly and deliberately. The benzoline (Paquelin's) thermo-cautery is a most valuable instrument for such cases. There is an objection to drawing down the uterus more than can be avoided. Sir J. Y. Simpson believes, probably with reason, that the dragging down of the uterus has been the cause of that fatal shock which has followed the operation in one or two instances. Otherwise the operation is perfectly free from danger. Perchloride of iron suspended in glycerine should be applied on a piece of lint to the cut surface, and the vagina carefully plugged with wetted cotton-wool or other material, if there be any tendency to hæmorrhage. (Other particulars concerning amputation of the cervix will be found at p. 453, vol. i).

There are other cases of cancer of the uterus where extirpation of the disease is undoubtedly the best treatment, viz., where the vaginal portion or parts thereof are infiltrated with medullary cancer, the cervix itself at the point of reflection of the vagina appearing sound. The operation

has been done but little, owing to the fact that the disease is rarely diagnosed at this early stage. I have amputated the cervix in a few cases of this kind, however, and at the present day there is a growing feeling in favor of excision of the cervix whenever the diagnosis is established.

Dr. Marion-Sims adopts a procedure which in his hands has appeared to give good results. He excises the cancer-

FIG. 188.



ous growth at the cervix uteri, and continues the excising process, by uterotome, scissors, and cutting curette, a little beyond the point where the healthy tissues are reached. The surface exposed is carefully packed over with styptic cotton.

[Dr. J. Marion Sims published an article in the *Am. Jour. of Obstetrics and Diseases of Women and Children*, vol. xii., No. 3, July, 1879, from which I make the following extracts:

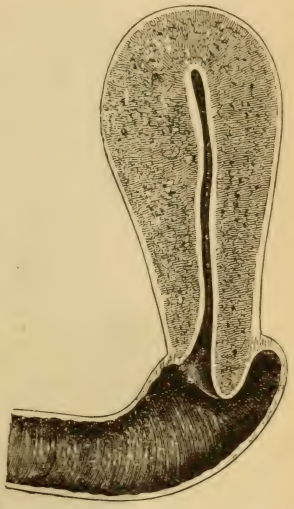
My plan of operating for epithelioma of the cervix is not to amputate, but to exsect the whole of the diseased tissue,

following it up to the body of the uterus if necessary, and when all is done that can be done by knife and scissors, then caustic strong enough to produce a slough is to be applied to the part from which the cancerous tissue has been exsected, and allowed to remain there till the slough is ready to come away.

I can better illustrate my method by clinical examples:

In October, 1873, Mrs. M., aged 35, the mother of four children, was sent to me by her physician from a neighboring town with epithelioma of the cervix uteri. She had been losing blood for several months and had a profuse serous leucorrhœa. She had no pain whatever and was the picture of good health.

Fig. 189.



On examination, I found the upper part of the vagina filled with a round knobby tumor, springing from and involving the anterior lip of the os tincæ. It was about the size of a Sicily orange, and bled easily on slight pressure. The uterus was movable, and the vaginal membrane was not infiltrated. Fig. 188 represents the tumor growing from and being a continuation of the anterior portion of the cervix uteri.

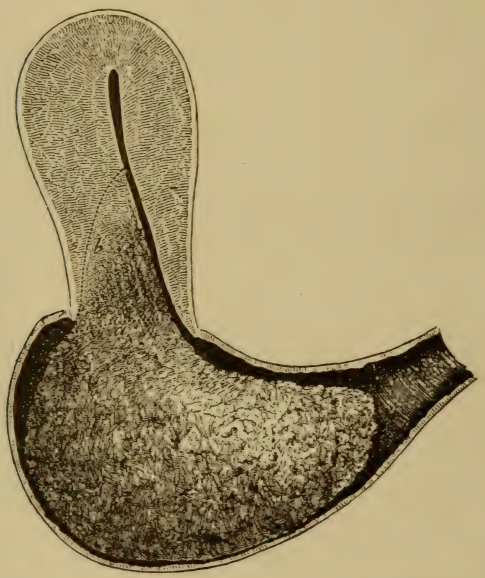
This case would have pleased those who advocate amputation, whether by the écraseur or by the electro-cautery. With either of these the tumor would have been removed in the direction of the dotted line *a*, leaving the portion between *a* and *b* reaching up to the os internum. But, guided by former experience, I determined to exsect the tumor as far up as I could find any diseased structure. And so, after breaking down the tumor and removing it with scissors at the dotted line *a*, I continued the operation by exsecting with knife and tenaculum the anterior half of the cervix, quite up to the os internum, as shown by the dotted line *b*.

With the appropriate after-treatment, the excavated cervical canal filled up with healthy granulations in a fortnight, and in another week Mrs. M. returned home with

the injunction to report to her family physician every two months, to see if there should be any recurrence of the disease. When she left me the os uteri presented the appearance represented by Fig. 189. The anterior lip had been destroyed by the operation, and the cervix anteriorly and the vagina formed a continuous line, while the posterior lip projected normally into the vagina.

Twelve months after this operation, her physician sent

FIG. 190.



Mrs. M. to me again, with a recurrent epithelioma. It presented precisely the same symptoms and the same appearance as the first tumor did. But it was a little larger and grew wholly from the posterior portion of the cervix uteri, filling up the vagina to a greater extent than the first one did. Fig. 190 represents the appearance and relative size of the tumor. It seemed to be a prolongation of the posterior lip of the os tincæ, as the first tumor was the prolongation of the anterior.

The operation by the wire loop, whether by electricity or by the écraseur, would have amputated the mass at the dot-

ted line *a*. But I did not stop at this point; I cut as far up the cervix as I could find any diseased structure to remove, which was quite up to the os internum, as shown by dotted line *b*. In three weeks she returned home, seemingly perfectly cured.

The vagina is often shortened by these operations, but in this case the vagina retained its normal size, and at its fundus we could see, instead of the cervix uteri, only a small puckered sulcus which marked the opening of the uterine canal.

Mrs. M. returned home with the injunction to report herself every two months to her physician for examination.

Exemption from suffering and the prolongation of life can only be purchased, under these circumstances, by constant vigilance. It is, therefore, necessary to watch all such cases as this from time to time, and whenever a rounded knobby tumefaction appears at the orifice of the uterine canal, or a fungous granulation is seen to spring up, not larger than a pea, we should lose no time in repeating the operation. In case of a mere pearly knob with purple base, it is necessary to incise it, and excise every trace of disease, whether by knife, scissors, or curette, and follow this up with appropriate caustic treatment.

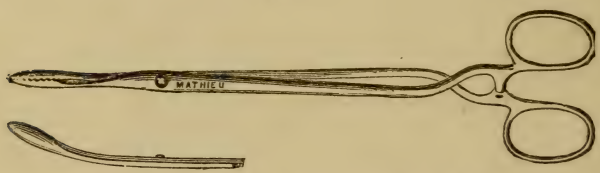
In the last five years Mrs. M. has been obliged to return to New York as many times to have granulations removed. In one instance it was necessary to incise largely the puckered vaginal opening of the uterine canal, and remove by curette granulations amounting in bulk to the size of an English walnut.

Notwithstanding all this Mrs. M.'s general health continues perfect. She has no pain; there is no emaciation, no cachexia, no loss of appetite, and no evidence of constitutional poisoning.

But for these operations there is every probability, nay, certainty, that she would not have survived the first invasion of the disease more than twelve or eighteen months. For eighteen months is about the ordinary duration of this disease. Prof. Fordyce Barker has seen one case that lasted for twelve years, and I have seen one of ten years' duration, and another of six. But in these two there were never at any time great hæmorrhages, nor great wasting from profuse serous discharges. Instead of large masses of granular matter to break down and slough off, leaving large sinuses to distil a septic, ichorous fluid to be absorbed

and to poison the blood, I noticed a small indurated irregular fissure with knobby granulations that gave issue to sero-pus in small quantities, occasionally mixed with blood, all of which found an easy outlet from the vagina. Instead of the ulceration extending up into the body of the uterus, it gradually and slowly encroached on the walls of the vagina. Cicatrization seemed slowly to follow ulceration, till the uterus was gradually drawn down from its position, high up in the pelvis, by the vagina which as gradually shortened, till it had almost entirely disappeared, and the fissure marking the place of the uterine outlet was not more than an inch from the ostium vagina. When large fungoid tumors break down and slough, and when this sloughing extends up into the body of the uterus, then

FIG. 191.



the system becomes rapidly poisoned by the absorption of septic matter, and the patient dies generally in a dropsical state. Again, death may come by some intercurrent disease, such as peritonitis, pneumonia, etc. Matthews Duncan truly says: "The chief causes of death in cancer are peritonitis, uræmia, septicæmia, pyæmia, and complications from diseases of veins or important viscera."

In my method of operating for epithelioma of the cervix, we need the speculum (Sims's), a proper knife, medium-sized scissors slightly curved on the flat, curettes, a dozen or more sponge probangs, tenacula, volsella, lock forceps for seizing arteries (Fig. 191), and styptic cotton-wool.

With proper precautions, and with appropriate means of arresting hæmorrhage, there can be none to any serious extent in operations for epithelioma. If the tumor have any degree of solidity, there is no danger of hæmorrhage at all. If it be soft and easily scooped away with the curette, the bleeding may be profuse.

But when it is soft and ready to break down, we have no alternative but in the curette, whether the bleeding be profuse or not. But there is never any danger if we have

prepared ourselves to control the hæmorrhage, it matters not how furious it may be.

Let us suppose that we are called upon to operate on such a case as is represented in Fig. 188 or Fig. 190.

The patient, properly prepared and etherized, is to be placed on a table in the left lateral semi-prone position; the Sims speculum applied, the tumor is to be seized with volsella, pulled forward, and held firmly. We then begin with the curette to break down and draw out the cancerous masses as fast as possible. But if fortunately the tumor holds well together, then we take the scissors and begin to cut loose the tumor from the cervix uteri anteriorly and laterally. When the tumor is rather firm and requires the knife or scissors for its removal, the bleeding is not severe, and constant sponging by the assistant keeps the vagina tolerably clear of blood. If the circular artery should be cut, we clasp it with a pair of spring forceps (Fig. 191), the bleeding ceases instantly and we proceed with the operation, the forceps hanging from the vagina and still holding the artery. Sometimes we may have two spring forceps in use at one time, and now and then three. But this is very seldom. And when the forceps are removed we usually find that they have succeeded in controlling the hæmorrhage entirely. Let us suppose that we have removed all that it is possible to remove with scissors. We might think the operation finished, but it is not so. With sponge probangs we clean out the cervical cavity made with scissors, and we pass the index finger into it, and if we find any indurated structure, whether the size of a grain of wheat or much larger, it must be removed.

Just as long as we can detect any of this indurated tissue by the touch, just so long must we continue to excise it, till the walls of the uterus are entirely freed from it, and have the soft elastic feeling characteristic of the natural structure. We remove this indurated tissue piecemeal, some pieces being not larger than a barleycorn, while others may be as large as the little finger-nail. This is by no means difficult. While the patient lies in the left lateral semi-prone position, the uterus is drawn down almost to the ostium vagina by a tenaculum or forceps; the left index-finger is passed into the uterus; the sense of touch immediately detects the horny, gristly, abnormal tissue, which is hooked up by a tenaculum, raised up to view, and cut out with a knife. My uterotome (Fig. 192) answers this pur-

Fig. 192.



pose admirably. Any narrow-bladed knife with a long handle will do as well.

This process is to be continued till every portion of gritty-feeling tissue is removed.

When we are perfectly satisfied that all diseased tissue is removed, which is known by the touch, we then, with scissors or knife, trim the edges of the cavernous opening made by the operation, whereby the vagina becomes continuous with what remains of the supra-vaginal cervix uteri. But the cervix, properly speaking, infra-vaginal portion, will be found to have been wholly removed with the diseased mass.

The hæmostatic forceps, if there are any in use, are to be removed, the parts to be sponged as dry as possible, and quickly filled with styptic cotton-wool, rendered styptic by solution of persulphate of iron. Take liq. ferri subsulphatis, 1 part, water, 3 parts. Mix, and saturate the cotton-wool, and squeeze it almost dry, and then fill the conical cavity made in the uterus by the operation with it. Pack it in tightly and cover it over with other layers of the cotton-wool styptic tightly packed, till the upper third of the vagina is securely tamponed. This is to be held *in situ* by plain cotton-wool wet in carbolized water, packed in till the whole vagina is firmly tamponed.

The patient must not be removed from the table to the bed as long as there is any oozing of blood. We must be sure that it is completely arrested. If we are in any doubt about it, a portion or even the whole of the tampon must be removed, and be reapplied anew, taking care to do the tamponing in a more thorough manner.

The operation over, the patient is put to bed. It is often, almost always, necessary to administer an anodyne, and the catheter must be used as required. In a few hours, perhaps four or five, it may be necessary to remove with the tampon screw a few pieces of the cotton-wool from the lower part of the vagina to take the pressure from the neck of the bladder, and even to relieve pain in the back.

We may remove more of the tampon on the following day. But the portion of tampon that fills the upper part of the vagina, and especially that in the neck of the uterus, is not to be disturbed till the fourth or fifth day. When this is wholly removed, then the conical excavation of the cervix, the real seat of the epitheliomatous growth, is to be filled with cotton-wool wet in a solution of chloride of zinc. Chloride of zinc is soluble in its weight of distilled water. But I usually make the solution thus:

℞ Zinci chloridi..... ʒ v.
Aq. destillat..... ℥ i.
M. ft. sol.

Saturate cotton-wool in this solution, then squeeze it dry and it is ready for use. Bits of cotton-wool thus prepared with chloride of zinc, the size of an almond, are to be snugly packed into the cervix till it is filled up to the level of the vagina. Then the upper part of the vagina is to be tamponed tightly with cotton-wool saturated with a solution of bicarb. soda.

The chloride of zinc produces intense pain, and it is always necessary to give morphia hypodermically and in sufficient quantities to relieve it.

If the zinc cotton-wool is too wet, the superabundant fluid runs down the vagina and inflames it. It is, therefore, necessary to squeeze it very dry before stuffing it into the cervix.

The cotton-wool wet with a solution of bicarbonate of soda is intended to protect the walls of the vagina against the irritating qualities of the zinc. But it does not seem to do much good. I have tried the albumen of egg, tannin, and other protections that have been recommended to me for this purpose, but with no better results.

It is very desirable to find something that will neutralize the chloride of zinc, and protect the walls of the vagina against its irritating qualities. The chloride produces no permanent mischief, but it is attended with suffering, and it irritates the urethra, thus producing frequent micturition.

The cotton-wool that retains the chloride *in situ* may be removed in part the next day, and wholly in a day or two more. But the zinc wool in the cervix is not to be interfered with till the fourth or fifth day after the operation. For this purpose it is better to place the patient on the table in the left lateral semiprone position, and to use a

Sims speculum of a small size. For the vagina will be found to be so puckered up by the action of the chloride of zinc that a large, or even an ordinary speculum could not be introduced without giving great pain.

When the parts are well exposed, we may or may not remove the zinc cotton-wool from the neck of the uterus. If it is in the least adherent, it is better to leave it for another day, and then it will be removed with facility and without danger of hæmorrhage.

When the zinc wool is all removed, we will find the hollow cone that it occupied smoothly covered over with a cup-shaped slough which may be taken away, sometimes in one entire piece. Again it may break and come away in two pieces. It is usually from one to two millimetres thick, say about a sixteenth of an inch. It is opaque, tough, pliable, smooth, and of a dull pearly-grayish color. It leaves a cavity filled with healthy-looking granulations, which under the daily use of carbolized warm vaginal injections heals up in ten or fifteen days.

It will be seen that the treatment proper after the operation occupies about ten days, and that cicatrization then requires about a fortnight more. The operation divides itself into two stages, that of extirpating the whole of the diseased tissue, and that of filling up the hollow cone made in the cervix by this operation, and of tamponing the vagina to retain the cervical dressing in its place. The only object of this is to arrest all hæmorrhage. If the seat of operation could be cleaned of blood and made sufficiently dry, we might resort to the caustic at once, but that is seldom possible. And so it is necessary to use the iron styptic to arrest all oozing of blood. Once the styptic dressing is made, it will take four or five days to get it away. And we must be careful not to hasten it, for fear of provoking a bleeding which would be the means of procrastinating still further the application of the caustic.

For removing the tampon, pass the left index finger into the vagina, and then pass the tampon-screw, by the side of it, and remove the tampon, a plug at a time, till we take away the desired quantity.

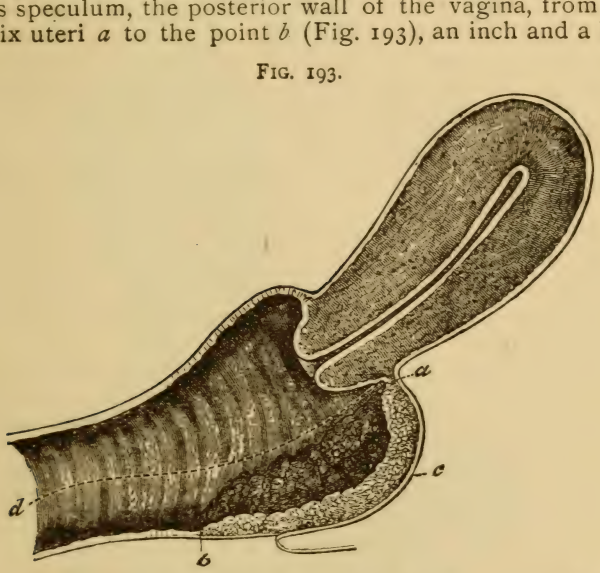
Epithelioma sometimes attacks the walls of the vagina, leaving the cervix uteri intact. I have seen several instances of this sort.

Here is one in which the whole posterior wall of the vagina, below the cervix uteri, was thickly studded with epi-

theliomatous granulations for the space of at least two and a half inches square. They came down to within an inch and a half of the perineum, and extended laterally for about two fifths of the circumference of the vagina.

My father was just on the eve of leaving home for Europe, and turned the case over to me. When the patient was placed in the left lateral semi prone position and the vagina widely dilated by atmospheric pressure admitted by the Sims speculum, the posterior wall of the vagina, from the cervix uteri *a* to the point *b* (Fig. 193), an inch and a half

FIG. 193.



from the perineum, was seen to be thickly covered with epitheliomatous vegetations, extending laterally as already described. (The diagram fails to illustrate the extent of the disease laterally.) These were all curetted till the vagina presented the appearance of healthy structure denuded of its epithelial covering.

It was interesting to notice the tympanitic sound made by the curette as it was strongly scraped along the diseased surface, showing how near it was to the intestinal canal. Notwithstanding the thinness of the membrane which at *c* separated us from the peritoneal cavity, the operation was finished precisely as it would have been done if there had been an inch of solid tissue intervening.

The removal of the epithelial growth was followed by the styptic cotton-wool (iron), and when it came away on the fourth day the chloride of zinc was applied, precisely as we would have done it in the cervix uteri.

It remained four or five days, and when it was removed a nice cup-shaped slough, nearly half the size of the palm of the hand, came away, leaving a smooth, healthy-looking surface which granulated and healed over in a fortnight, under the daily use of carbolized vaginal injections.

It might be supposed that there is danger of the slough extending through the posterior *cul de sac* into the peritoneal cavity, when the chloride of zinc is used in this way. But nature guards against this seeming danger by throwing out fibrinous deposits that protect the peritoneal cavity. And it might also be supposed that there is danger of peritonitis from such treatment, but there seems to be little or none.

The sloughing and consequent cicatrization in this case necessarily shortened the posterior wall of the vagina. Instead of the posterior wall having the capacious dimensions shown by *a c b*, Fig. 193, it presented that shown by the dotted line *a d*.

Instead of a grand curve presenting itself when the patient was placed in the left lateral semi-prone position, with the speculum introduced so as to allow of full atmospheric pressure, we now saw only the short, straight posterior wall as represented by the dotted lines in the figure. Some six or eight months after operation, two little suspicious-looking nodules presented themselves on the walls of the vagina on the right side, at the line of union of the anterior and posterior walls, which I removed with the curette, treating them with the chloride of zinc in the usual way. After this I put the patient on the use of arsenic (Fowler's solution), as so strongly recommended by Drs. Washington L. Atlee and Lewis A. Sayre, and with the happiest effect. For Mrs. A. had had no return of the disease when I last heard from her; she no longer had any cachectic appearance; and she had gained flesh and strength, and considered herself a well woman.

From the effects of the arsenic in this case and in some others in which I have used it, I am disposed to attach great importance to its alterative action in carcinoma.

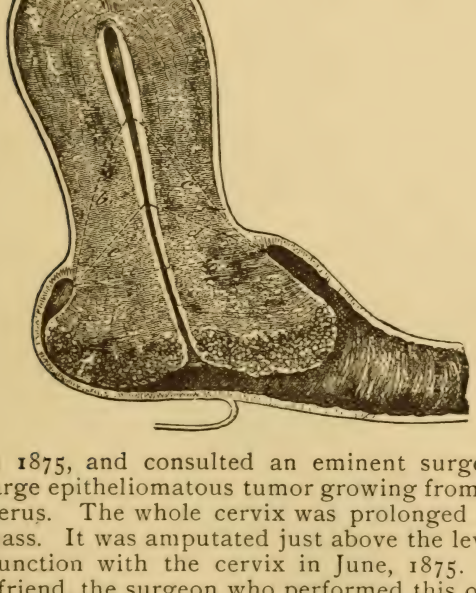
As it can do no harm if administered in such a way and in such doses as not to interfere with the healthy perform-

ance of the digestive functions, I would strongly advise its use after the local disease has been eradicated by surgical treatment.

Amputation of the epithelioma as now performed by most surgeons, or burning its exuberant granulations with the actual cautery, as did Jobert (de Lamballe), Nélaton, and their followers, are procedures that must give way to a more rational and more efficient method of treatment.

Mrs. C., aged about 41, regular, noticed a vaginal dis-

FIG. 194.



charge in 1875, and consulted an eminent surgeon, who found a large epitheliomatous tumor growing from the neck of the uterus. The whole cervix was prolonged into this morbid mass. It was amputated just above the level of the vaginal junction with the cervix in June, 1875. In Jan., 1876, my friend, the surgeon who performed this operation, sent his patient to me. She was a large, fine-looking woman, exceedingly nervous, and very timid of all surgical procedures.

On examination I found the uterus mobile, the body slightly hypertrophied, and the cervix particularly so. The cervix was about two inches in diameter, was truncated, and projected nearly an inch beyond the level of the vagina. It

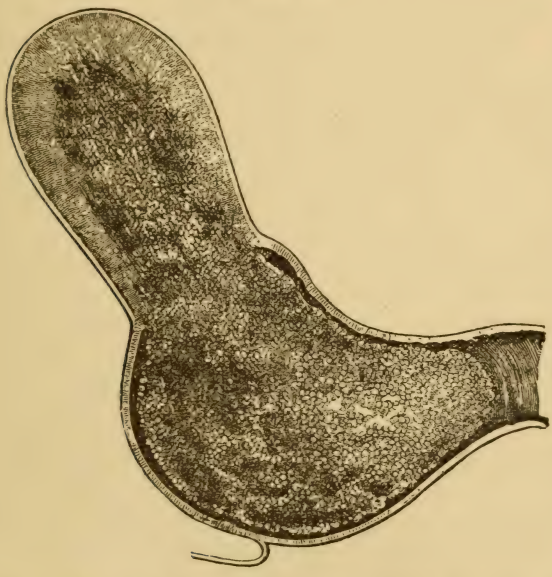
had a rough and knobby feel; did not bleed; but its structure was friable and could be broken down with the finger-nail.

Fig. 194 represents the relative size and shape of the cervix as it projected into the vagina. It would have been easy to amputate the disease at the dotted line *a*, with the écraseur or with the electro-cautery. But this would not have eradicated all the diseased tissue. The patient placed in the usual position, most of the intra-vaginal portion of the disease was broken down and scraped away with the curette. The scissors were then resorted to, and diseased tissue was removed to the dotted line *d e*, about half way up to the os internum. The remainder of the excavation *b c* to the os internum was done with the uterotome. The finger was used to detect any hardened diseased tissue, which was then hooked up with the tenaculum raised to the level of the vagina, when it was shaved off with the knife. This process is always a little tedious, for it is necessary to search out diseased structure and remove it piecemeal. We easily recognize it by the touch, for it feels hard and is found in irregular patches, as before said, sometimes as broad as the finger-nail, sometimes larger and often much smaller. In this case this abnormal structure was found all round the inner portion of the cervix and quite up to the os internum. Indeed, it was necessary to exsect by a circular sweep of the knife the entire os internum, taking it out in two semi-circular pieces. When this was finished, the case was treated as already indicated, first with styptic iron cotton-wool to restrain hæmorrhage, and after four or five days with the chloride of zinc. In this case the spring forceps were used once to seize a large artery, probably the circular, which gave no more trouble afterward.

A month after the operation, the depth of the uterus was just two and a quarter inches, instead of three and a quarter, as it was before the operation. Six months after the operation, some epitheliomatous granulations appeared in the neck of the uterus on the anterior portion, which were removed with the curette, and the excavation was treated with the chloride of zinc cotton-wool as before. About nine months after this, it was again necessary to repeat the curetting for a return of fungoid granulations, evidently epitheliomatous. After the first operation, Mrs. C. was put on the use of Routh's solution of the chloro-phosphide of arsenic, which is a valuable remedy, but I fear it is not equal to the Fowler's solution in such cases as this.

How often if may be necessary to repeat these little operations with the curette I cannot tell. But the relief of suffering and the prolongation of life depend upon the prompt manner in which we resort to this process. While the disease is confined to the cervix uteri we have it under control, but when it passes to the body of the uterus, it soon becomes unmanageable, and goes on to a fatal termination.

FIG. 195.



Notwithstanding all this, almost every case is susceptible of improvement by operation, unless it is *in extremis*.

The removal of sloughing tissue with the curette, to be followed by the chloride of zinc or bromine, will often add greatly to the comfort of the patient, by relieving pain, arresting hæmorrhage and the profuse ichorous discharge. If we can do only this for such hopeless cases, we are justified in the attempt.

The most unfavorable cases for operation are those in which the epitheliomatous granulations penetrate deeply into the cavity of the uterus, and which can be easily removed with the curette. Fig. 195 represents just what I

mean. In such cases the mass of epithelioma projecting into the vagina is always easily broken down with the curette. There is but little work for scissors, and none for the knife. The granulations in the body of the womb are removed in great masses with facility, and unfortunately, in all such cases, the hæmorrhage will be profuse, and if the operator is not prepared to arrest it promptly, it might become alarming and even dangerous. It is always of a bright arterial color, and seems to pour out from a thousand little arteries; for doubtless each filament of granular matter has its arteriole hypertrophied according to the nutriment necessary for fungoid growth.

We should always be prepared for hæmorrhage under all circumstances. And before we begin to operate, we should have at least three or four whalebone applicators, ten or twelve inches long, with the small end well wrapped with styptic iron cotton-wool of sufficient length to reach quite to the fundus uteri. If the hæmorrhage is very profuse, the granulations are to be removed with great celerity, and the whole cavity of the uterus quickly tamponed by pushing in one whalebone applicator armed with the styptic cotton, then another by the side of the first, and then a third, and a fourth if necessary. Thus we may have three or four whalebone instruments protruding from the vagina all at once. The hæmorrhage will now be staunched, and we remove one whalebone applicator, leaving the styptic cotton-wool in the cavity of the uterus. Then the second, third, and fourth, if there are so many, may be taken away, and if there is still some fresh blood oozing by the side of these uterine styptic plugs, we arm the whalebone with a thin layer of the styptic cotton, and pass it in by the side of the others, and then another if necessary, till we are sure there can be no more bleeding. When we are sure of this, then we tampon the vagina with the styptic cotton-wool, so as to ensure against the slipping of the plugs from the cavity of the uterus. When the uterus is thus tamponed, we must soon begin to remove the tampon from the lower part of the vagina, for there is always danger of septic poisoning when any considerable quantity of extravasated blood is shut up in the uterus with iron or any other styptic. It undergoes decomposition rapidly, and as it lies in contact with a largely denuded surface, it is placed under the most favorable conditions for rapid septicæmia.

We must, therefore, get this tampon out of the cavity of

the uterus as soon as possible. And if in even twenty-four hours we find the pulse, and particularly the temperature running up, we have no time to lose, and the tampon must come away even at the risk of inducing hæmorrhage. Fortunately under these circumstances we seldom have hæmorrhage after removal of tampons.

During the operation the hæmorrhage is profuse, and we are obliged to resort to heroic means to arrest it. Once arrested, we begin to fear the danger that may arise in consequence of the means adopted for this purpose; and as soon as it is safe to do so we remove the tampon entirely. Thus we see that what was absolutely essential to saving life to-day, may to-morrow become the ready means of destroying it. The judgment of the operator must then be as quick to detect the danger and ward it off in the latter instance as it was in the former.

We often see uterine cancer in such an advanced state that we can do nothing but give anodynes to relieve pain, and take precautions to ensure cleanliness. Each of these is of prime importance. Pain may be borne for a while; but antiseptic injections cannot be dispensed with. For they are essential, not only for the comfort of the patient, but for that of the family and attendants.

Sometimes it is justifiable to submit advanced cases of uterine cancer to operation by the curette, merely for the purpose of removing the sloughing *débris* from the cavity of the uterus, and thereby of preventing fœtor. A cancer without a slough has no odor. Dead matter in cancer produces fœtor, and its absorption produces the cancerous cachexia. We are, therefore, doubly justified in scraping it out whenever the patient is strong enough to take an anæsthetic.

Pain is not commonly an attendant on cancer in its early stages. It belongs to a later period, characterized by inflammation and its products. But come when it may, it soon becomes a prominent symptom demanding prompt attention.

Whenever it prevents sleep, or by its prolonged continuance exhausts the nervous system of the patient, we must control it. Opium in some form is the best of all anodynes in this disease. We may give laudanum by the rectum or the mouth, or we may give some of the salts of morphia by the mouth or hypodermically.

Some patients will prefer McMunn's elixir of opium;

some Squibbs's denarcotized laudanum, and others chlorodyne. When the patient once resorts to opium, she will be obliged to continue it during the remainder of her brief existence. Though capable occasionally of doing mischief, it is in the majority of cases a divine gift.

It is only when the uterus becomes fixed in the pelvis by the exudation of organized lymph that great pain is experienced. The pain is evidently the result of amalgamation of the nerves of the parts with the products of inflammation which produce a neuromatous mass. The pains are frequently of a periodic character, often benefitted by quinine, and as before said, always demand the use of opiates.

We cannot account for severe pain supervening during the progress of this disease, except on the principle of the neuroma. And we find in the inflammatory induration of tissue all the elements necessary to constitute this abnormal structure.

In 1876 I attended the meeting of the British Medical Association at Sheffield, and read before the Obstetrical Section a paper on my method of operating for epithelioma of the cervix uteri; after which I was invited by Dr. Watson, of Peniston, to operate the next day on a case of his. The patient was about thirty-three years old. The upper half of the vagina was filled with a large cancerous mass that bled easily on touch. It involved the greater part of the cervix, and was about the size of a small Sicily orange. I was assisted by Dr. Kidd, of Dublin, and by my countryman Dr. Horatio R. Storer. It was agreed that we should preserve samples of diseased tissue from different parts of the epithelioma for microscopical examination. After breaking down and cutting away the bleeding granular mass that filled the vagina, we found diseased tissue extending up the cervix. It even extended to and around the os internum. The cervix was removed conically up to the os internum, and as the peculiar indurated cancerous tissue was found encircling the os internum, it was removed in two semicircular pieces. There then seemed to be no more cancerous tissue to exsect, and the excavated cervical cone was filled with styptic (iron) cotton-wool, and the case treated as before described.

On the following day, specimens of the tissue removed were submitted, with the history of the case and operation, to the Obstetrical Section of the British Medical Associa-

tion, and these were referred to Dr. James Ross, of Manchester, for microscopical examination.

The consultants did not think it necessary to submit portions of the tumor projecting into the vagina for examination, as there could be no question about its nature. The question to be solved was this: I insisted that the indurated gristly and gritty feeling tissue removed from the cervix and around the os internum was of malignant nature. If it was, then my method of exsection was the proper one; if not, then exsection of the indurated abnormal tissue of the cervix was not necessary. To this end, two specimens were submitted to the section and referred to Dr. Ross.

1st. Indurated tissue from the supra-vaginal portion of the cervix, and

2d. Indurated tissue from the circumference of the os internum.

The following is Dr. Ross's report:

To the President of the Obstetrical Section of the British Medical Association.

Sir: Dr. Thorburn having handed to me two parcels containing fragments of tissue; and having, along with Dr. Atthill (President of the Section), explained that those in No. I. were removed by Dr. Marion Sims from the cervix uteri, after he had previously taken away a mass of what was supposed to have been epithelioma, and that those in No. II. were removed by him from the circumference of the os internum uteri, I have to report that the microscopical appearances obtained from an examination of these specimens are as follows:

No. I.—The fragments of tissue in this parcel contained several hard nodules which felt like shot when pressed between the finger and thumb. Sections of these nodules showed that the healthy tissue was infiltrated by oval, nucleated cells about the $\frac{1}{100}$ of an inch in diameter. These cells were generally arranged in a circular manner, so as to form "nests," but were not so compressed as to have lost their distinctness of outline. These cells were also observed, although they were not so numerous, in the tissue surrounding the nodules, but sections were obtained from the tissue at a distance from the nodules, in which no cells could be seen.

No. II.—In some of the sections made from the tissue in this parcel no nucleated cells were met with, but in one

portion, where a nodule was felt between the finger and thumb, distinct "nests" of nucleated cells were observed.

(Signed) JAMES ROSS.

MANCHESTER, August 4th, 1876.

Dr. Ross's report confirms others that I have had made, but I give his alone, because he is recognized as one of the most careful and accurate microscopists in England.

His report shows that the tissue removed from the cervix uteri was infiltrated with "nests" of abnormal structure.

The inference is clear, that this must be wholly removed to ensure a successful result. But it may well be asked: "Is there no immediate danger from these seemingly heroic exsections?" I am amazed at the impunity with which they are generally performed. But they do sometimes terminate fatally.

Prof. Böhm, Superintendent and Surgeon to the Rudolf Hospital, Vienna, invited me to operate on a case of epithelioma of the cervix uteri in his wards, and the following notes have been furnished me:

"Marie Punick, aged 41, the mother of two children, each born in the eighth month of pregnancy, enjoyed good health till about three months ago. Her menses had always been regular, lasting two days, till the last of December, '77, when she was taken with metrorrhagia and with pain which compelled her to enter our hospital, where we found her in the following condition:

"She is well formed and well preserved, but has a pale-yellow tint of the skin. The pulse and temperature are normal.

"Nothing abnormal in the thoracic organs. The uterus is a little enlarged and mobile. The vaginal mucous membrane shows great anæmia. On the anterior lip of the uterus there is a tumor the size of a large nut, which is hard to the feel and knobby on the surface. On the right edge of the posterior lip there is a small nodosity."

[Fig. 196 is from a drawing taken from nature by Dr. Heitzmann the day before the operation.]

"The operation was performed by Dr. Marion Sims, on the 19th of March, 1878.

"The patient took chloroform. At night the pulse was 93, and temperature 37° C. She complained of headache and had some bilious vomiting. The abdomen was somewhat sensitive to the touch. She got ice and opium.

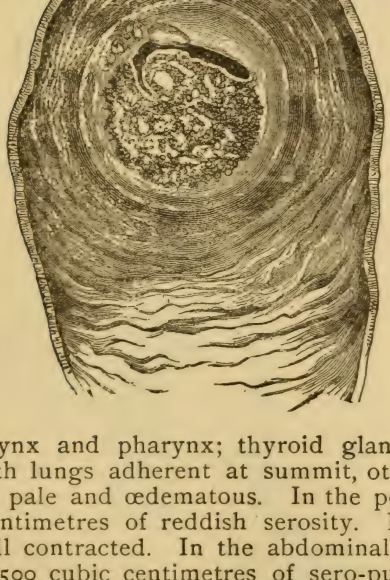
20th.—Pulse, 115; temperature, 37.6° C.; tampons removed; vomiting continuous; abdomen slightly tympanitic.

21st.—Pulse, 112; temperature, 37.4; vomiting more frequent.

22d.—Pulse filiform; lower extremities cold; abdomen tympanitic and very tender to the touch, and at midday she died.

Post-mortem.—"Body of slightly jaundiced tint; the head somewhat œdematous; the trachea full of bilious mucus,

FIG. 196.

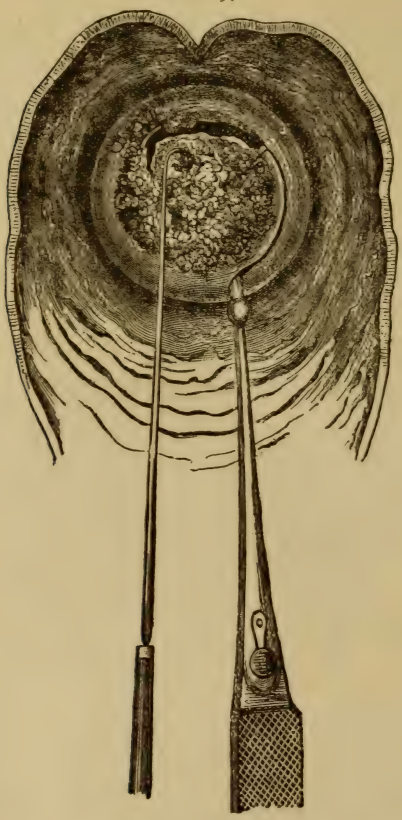


same in larynx and pharynx; thyroid gland somewhat colloid. Both lungs adherent at summit, otherwise free. Parenchyma pale and œdematous. In the pericardium a few cubic centimetres of reddish serosity. Heart of normal size, well contracted. In the abdominal cavity there were about 500 cubic centimetres of sero-purulent fluid. The peritoneum is injected and covered everywhere with layers of fibro-plastic exudation. The liver is somewhat smaller than it should be, firm and granular.

"The spleen is fifty per cent larger than it should be. The kidneys pale. The stomach and intestines a little distended. In the bladder there was a small quantity of clear

urine. The uterus and its annexes were intimately adherent to the surrounding parts. The two Fallopian tubes were dropsical. The ovaries are normally crenated. In

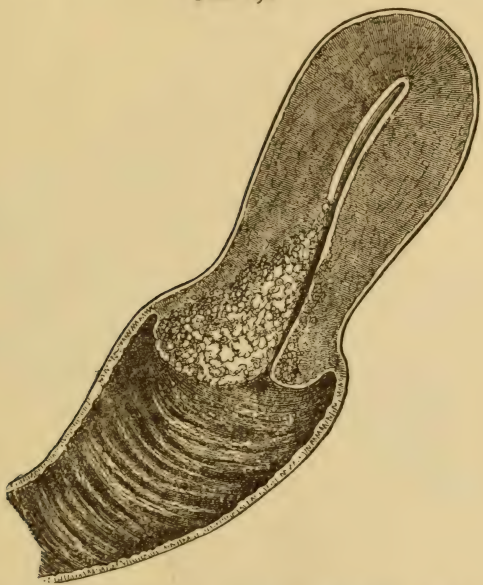
FIG. 197.



the left there is a cyst the size of a nut; its contents sanguinolent. The os tincæ, the neck of the uterus, and the lower part of the corpus uteri were wanting. In their place there was a cavity, now suppurating, which is limited by the peritoneum and by a thin muscular layer of the uterus. This cavity was discolored by sesquichloride of iron used in the tampon. It communicated with the peri-

toneum by several little openings the size of a pin's head, leading to the Douglas *cul de sac*. These little perforations were in the posterior wall of the cervix, about two centimetres above the level of the posterior wall of the vagina, and near the deepest point of excavation. Around the perforations the peritoneum was stained with the sesquichloride of iron. By minute examination (microscopically) of the pelvic lymphatic glands, we found some of

FIG. 198



them containing pus, but nowhere did we find any trace of cancer."

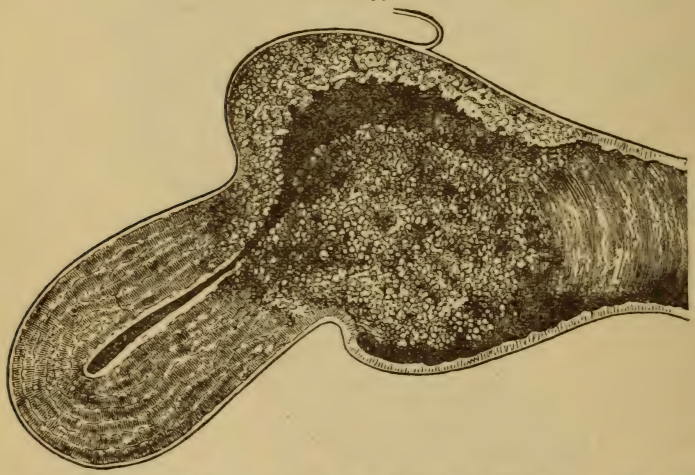
Fig. 197 represents the initial step of the exsection.

We seldom see an epithelioma of the cervix uteri at such an early period. Judging from its history and from its appearance, it had existed barely three months. The operation was very easy and was quickly done. There was but little bleeding. It was just the case in which we could promise a certain cure. Everything was favorable to success: the age and condition of the patient, the limited extent of the disease, and the thoroughness of its removal,

all justified me in giving a positively favorable prognosis. I was therefore greatly surprised when I visited my patient the next morning to find her in a critical condition.

Fig. 198, p. 303 gives a good idea of the extent of the disease. Anteriorly it reached to the os internum. The posterior segment of the cervix was a little more diseased than is shown in the cut. All the diseased structure was removed with the knife aided with the tenaculum. The sense of touch was the guide. Wherever we find gristly tissue, it is to be hooked up with the tenaculum

FIG. 199.



and cut out. This process was here followed up till the whole cervix was exsected, leaving only the peritoneal covering lined with a thin layer of uterine tissue.

I also operated for Prof. Salzer on a case of epithelioma of the cervix uteri. His case was most unfavorable for operation, and was attended by an accident which it is well to know how to remedy.

This diagram, from a drawing made by Dr. Heitzmann, tells the story of its extent and relations. The anterior lip of the os tincæ was prolonged into a large epitheliomatous tumor, bleeding easily on touch. The posterior lip was destroyed, and its place occupied by fungoid granulations which extended up into the cervix, and down on the posterior wall of the vagina to within two inches of the peri-

neum. The diagram is placed upside down, to show the parts as they would be seen in the left lateral semi-prone position with the Sims speculum.

With the curette I removed the granulations from the posterior wall of the vagina. Part of the projecting mass from the anterior portion of the cervix was removed with the curette, the remainder with scissors. After this was cut away to the level of the vagina the anterior portion of the cervix was hooked with a tenaculum, pulled forward, and then I began to exsect it with the uterotome. While I was cutting away this cervical tissue, a little glistening fatty body, about the size of a bean, floated out on the seat of operation which I at once recognized as a bit of omental or mesenteric fat. Then I knew that the peritoneal cavity had been opened, and by passing my finger in I discovered that the posterior vaginal *cul de sac* was wholly torn loose from the cervix uteri. I thought at first that I might possibly have made the opening with the knife. But on minute investigation it was seen that this hypothesis was out of the question, as the knife could not have passed beyond the canal of the cervix, and as the vaginal attachment was torn loose from the posterior portion of the cervix in a manner to correspond exactly with its semicircular border. This accident was produced by the distal end of the speculum, which, pulling the fornix vaginæ back too forcibly toward the rectum, ruptured its already weakened tissue.

My first idea was to cut away all that portion of the posterior vaginal wall that had been the seat of the disease, and then to pull the uterus forward, and unite the two by suture. But by passing one finger in the rectum and another along the posterior wall of the vagina, I discovered that the denuded or diseased portion of the vagina extended forward along the rectum for at least an inch and a half. So I could not carry out my original plan, and was obliged to unite the cervix uteri to the border of the vaginal *cul de sac*, from which it had been torn. I then passed four silk sutures through the posterior border of the cervix and the corresponding portion of the lacerated vaginal *cul de sac*. Two or three ounces of blood had run into the peritoneal cavity through this accidental opening. The distal ends of the sutures were thrown up over the hip and held there; the proximal ends were pulled forward over the anterior wall of the vagina and held; then the middle portion, extending antero-posteriorly across the wound, were pulled apart so

as to permit the easy passage of sponge probangs into the peritoneal cavity; then a sponge probang was forcibly pressed on the bleeding cervix to control the oozing of blood, while the peritoneal cavity was thoroughly cleaned out by rapidly passing in one sponge probang after another. After a little while the sponge probangs were passed in and drawn out dry and clean, then the sutures were quickly pulled, and the utero-vagino-peritoneal opening was closed, and held so by tying each suture separately. The ends of the sutures were left long and hanging from the vagina. The operation was then finished just as if this accident had not occurred. The excavated cervix was filled with iron cotton-wool, and the vagina was tamponed as usual. The next morning the tampons were removed, and the patient speedily recovered from the operation, and in due time left the hospital.

My Vienna experience was unfortunate, but most instructive.

Prof. Böhm's case at the Rudolf Hospital was unusually favorable for operation, and yet she died of peritonitis the third day after operation. *Post mortem* showed that the peritonitis was due to minute perforations through the posterior portion of the cervix which communicated with the peritoneal cavity. What caused these little perforations?

I (and my son Dr. Harry Marion Sims) had performed so many operations of this kind, and with such impunity, that it did not occur to me that anything but good could come from forcible tamponing. I looked upon it as powerful to control hæmorrhage, and as dangerous only in producing septicæmia if the tampon were allowed to remain too long *in situ*. And this we could easily control by removing it and using antiseptic injections.

In Prof. Böhm's case, the little perforations through the posterior wall of the cervix into the peritoneum were made by forcible tamponing. There is every certainty that the tissue yielded to the packing of the tampon.

In each and in every case, the force exerted in strongly tamponing the cavity of the excavated cervix would inevitably be expended against the posterior wall of the cavity, and not against the anterior, which is out of the line of action.

The forcible impaction of the excavated cavity produced an immediate laceration of tissue at the point of greatest pressure, terminating fatally by peritonitis. Death could not have occurred if the tampon had not been used.

An important lesson is thus sadly and indelibly impressed upon my mind, and I wish others to profit as well by it.

The accident that occurred in Prof. Salzer's case, the disruption of the posterior wall of the vagina from the cervix uteri, was unavoidable. No one was to blame for it. The vagina at its uterine attachment was so weakened, and so nearly destroyed by cancerous degeneration that it required but slight traction to tear it asunder.

It was fortunate that this accident was promptly and thoroughly repaired.

The following inferences seem to be deducible from the facts set forth in this paper:

1. Do not amputate or slice off an epithelioma of the cervix uteri on a level with the vagina, whether by the écraseur or the electro-cautery.

2. Exsect the whole of the diseased tissue, even up to the os internum if necessary.

3. Arrest the bleeding, when necessary, with a tampon of styptic iron or alum cotton-wool.

4. Be careful not to apply the tampon with such force as to lacerate the excavated cervix uteri.

5. When the styptic tampon is removed, cauterize the granulating cavity from which the disease was exsected with chloride of zinc, or some other manageable caustic capable of producing a slough.

6. After the removal of the caustic and the slough it produces, use carbolized warm-water vaginal douches daily till cicatrization is complete.

7. After the cure, put the patient on the use of arsenic as a protection against the cancerous diathesis, and urge the importance of examination every two or three months for the purpose of detecting the recurrence of disease.

8. Then if fungous granulations or knobby protuberances not larger than a pea are found, lose no time in removing them; and treat the case afterward with caustic just as in the first instance.

9. Almost every case may be benefited by operation, even when there is no hope of giving entire relief.

Dr. Reamy, of Cincinnati, performs this operation by exsection and not by amputation. We both worked out this method of operating about the same time independently of each other, and we both published our results about the same time. I have always exsected the cervix piecemeal,

But Dr. Reamy often takes it out with scissors in one solid piece, reaching quite up to the os internum.

During a visit to Koeberlé in September, 1877, he informed me that he now never amputates the epitheliomatous cervix uteri; but he exsects it quite up to the os internum if necessary. He operates in the early stages of the disease, and uses Paquelin's thermo-cautère, removing a conical plug from the cervix. Dr. Wilson,* of Baltimore, has recently performed this operation in the same way, and he has proven that the Paquelin cautery can be successfully used in the Sims position with the Sims speculum. This is one of the most important improvements as yet made in this operation.

Mr. Spencer Wells also exsects the cervix uteri for incipient carcinoma with the Paquelin cautery.

I have no prejudices in favor of my own plan. But we can by the sense of touch follow up the diseased tissue and remove it all; while by the cautery there will always be a doubt whether we have done this or not. It is possible that the actual cautery may be preferable to the potential after the diseased tissue is exsected. The point that I insist on is, that the disease should be exsected and not merely amputated, whether this be done with cutting instruments or the actual cautery.]

Dr. Lombe Atthill states that he has adopted Dr. Marion Sims's plan in two cases with great benefit, and he considers it a valuable procedure when the disease is detected early. Dr. Playfair states also that he has found Sims's method feasible and advantageous.

Dr. W. H. Baker† (Boston, U. S. A.) has practiced very successfully a modification or extension of Dr. Marion Sims's operation. The cervix is seized and drawn down. The portio vaginalis is then cut into anteriorly with scissors, and the supra-vaginal anterior cervix separated from the bladder by scissors and forefinger. The same incision is then made posteriorly, and the posterior supra-vaginal cervix separated from peritoneum to level of internal os uteri. Next the cervix is separated at the sides. This being done the uterotome is employed, and a funnel-shaped portion of the body of the uterus is cut out. This is like Sims's operation, with the exception that it is here possible

* *Maryland Medical Journal*, Dec., 1878.

† "Treatment of Cancer of the Uterus."—*Amer. Journ. of Obst.*, April, 1882.

to remove more of the body of the uterus. The result is that the cervix is entirely removed, as well as nearly or quite one half of the body of the uterus. The actual cautery at a red heat is then everywhere applied, which requires time to do effectually. Perfect quiet, catheter every six hours, opiates to confine bowels for ten days. In twelve cases of operation, where the disease appeared capable of entire removal, the following were results: Seven were living and well after periods of twenty-nine, twenty-seven, twenty-two, twenty-one, eighteen, eighteen, and eleven months respectively.

The removal of the entire uterus for cancer has been of late rather frequently performed. Dr. Blundell in 1828 removed the uterus *per vaginam* in three cases. Freund, of Strasburg, has lately removed the uterus by abdominal section in a considerable number of cases. In Sept., 1878,* Freund had operated ten times with five deaths.

The method adopted by Freund is as follows: The abdomen is opened as in ovariotomy. The uterus is drawn up out of the pelvis by means of a needle and thread passed through the fundus of the uterus. Before the uterus is removed three ligatures are inserted on each side, securing the broad ligament in three divisions, and when the uterus has been cut away the ends of these ligatures are brought out at the vagina. The peritoneal edges of the broad ligaments are also secured by sutures so as to more completely close the aperture between the vagina and abdomen.†

One of the difficulties attendant on the extirpation of the uterus is the liability to ligature the ureters. In two cases which have been related this occurred.

The operation has undoubtedly been performed successfully in a certain number of cases. The results obtained by other operators have not been so good as those of Freund, and probably the operation is capable of being made less immediately dangerous than it at present appears to be. We are yet, however, not in possession of facts which are encouraging as to the final result of the operation, or as to its effects in procuring a notable prolongation of life.

As a *cauterizing application* in cases of cancer of the cervix

* *Klin. Vorträge*, No. 133, for April, 1878; see also *Obst. Journ.*, No. 72, p. 817.

† See Mr. Spencer Wells's Lectures, Roy. Coll. of Surgeons, *Brit. Med. Journ.*, July, 1878.

uteri, bromine in solution has been successfully used by Dr. Routh and Dr. Wynn Williams. The method of employing it, as described by Dr. Williams,* is to inject into the tissues of the affected part a strong solution of bromine in spirit (twelve grains to a drachm) by means of a syringe, at properly selected situations. The vagina requires to be well protected from the action of the caustic, and it is injected about half an inch deep. Disintegration of the parts injected rapidly follows. The bromine must be previously carefully mixed with the spirit. The syringe is of glass with a platinum point. For acting on a broader surface cotton-wool wrapped round a piece of stick and dipped in the solution; or a piece of cotton-wool soaked therein and kept in apposition by means of a little gutta-percha cup, are employed. In all these procedures the vagina is protected by cotton-wool soaked in solution of carbonate of soda. Following the treatment a weaker bromine solution is used as a lotion daily.

We now come to the question of the palliative treatment of cases of uterine cancer, where surgical measures are inapplicable. There are three conditions to the relief of which our attention is necessarily more particularly directed —the pain, the hæmorrhage, and the discharge; and, besides relieving these, we have to devise means for maintaining the functions of the body generally in a state of activity, and for dealing with the many secondary evils likely to present themselves in the course of this disease.

The *hæmorrhage* is to be checked, if slight, by injections of iced water into the vagina and into the rectum; if more severe, by application of perchloride of iron or tannin, and by the actual cautery, or, in very severe cases, by plugging the vagina, using a saturated solution of perchloride of iron in glycerine, the solution being applied by means of a sponge to the bleeding surface, and withdrawn subsequently by means of a string attached to the sponge (Simpson). Tannin in a fine powder, or tannic acid, may be applied through a small tube, or, better still, in form of a pessary. Tincture of matico is highly spoken of by some authors. If fluids are injected to check the hæmorrhage, care must be taken that they actually come into contact with the bleeding surface. In cases of cauliflower excrescence not admitting of amputation of the cervix, the soft bleeding

* "On Cancer of the Uterus," etc. Renshaw, 1868.

masses have been sometimes broken up with the fingers, and tincture of iron injected into the centre, and with the effect of checking hæmorrhage and discharge. Dr. Hicks states that he has found a saturated solution of alum holding in suspension tannic acid, applied every day, very effectual in reducing the more tender parts of the tumor in cases of cauliflower excrescence. In some cases which have fallen under my own notice, I was able to effect the same object by applying daily a sponge dipped in strong solution of lunar caustic. To *prevent* hæmorrhage, the patient should, whatever be the nature of the disease, be kept quiet, and especially before and during the catamenial period. Brandy or other stimulants must be given to sustain the patient's strength; and very considerable quantities may be necessary to avert instant dissolution when the hæmorrhage is very profuse. Opium may be very advantageously given at the same time.

The *discharges* in cases of uterine cancer are often very offensive, owing to the decomposition of the detritus from the ulcerated surface. The frequent use of the douche, by means of which a stream of water is made to pass gently over the affected surface, is the best means which can be adopted for obviating the unpleasantness of the discharge in ordinary cases. Care is very necessary not to push the extremity of the tube against the ulcerated surface, or bleeding may occur. The washing out of the vagina should be performed frequently. The temperature of the water used should be that which is most grateful to the patient. It is often necessary to use a disinfecting fluid as an injection in order to get rid of the offensive fœtor. For this purpose diluted carbolic acid, carbolized oil, Condy's fluid, chloralum, are all available. Creosote may also be mentioned as a powerful deodorizer. To render the discharge less offensive, frequent ablutions with or without the use of disinfectants are very necessary; other indications are thus at the same time fulfilled.

The *pain* in cancer of the uterus is very severe, often exceedingly so, and it must be relieved. For this purpose opium, in that form which is found by experience to be most suited to the patient, must be given, the dose being regulated and the form varied according to circumstances. It is not uncommonly found necessary to give opium in very large doses, the patient having become so habituated to its use that a small dose has no effect whatever. Opium

is often conveniently given in form of suppository or pessary: I have found it most effective when administered in a lavement. Opium, in some form or other, is generally necessary, but other medicines are frequently of great service as accessories. Ether, chloroform, or the two latter combined, cannabis indica, conium, hyoscyamus, etc., are all and each of them of use in certain cases. The application of carbolic acid to the ulcerated surface was suggested by Sir J. Y. Simpson.

The *general nutrition* of the patient demands careful attention. The digestive organs are frequently in a very disordered state, the patient having little or no appetite, and the bowels being extremely constipated. The first and most important part of the treatment consists in feeding the patient frequently and with easily digested food. And we can only find by experience what is best. Milk is often a valuable article of diet in such cases; wine or other alcoholic beverages are generally required. For the relief of nausea and thirst, ice placed in the mouth frequently is most beneficial. The bowels require careful attention; small doses of castor-oil, frequently given, are the best means of inducing regularity in this respect, but occasional copious enemata are often necessary to unload the distended rectum. Two or three drachms of Rochelle salt, with a little tincture of senna, form a useful occasional aperient draught. The act of defæcation is often exceedingly painful, and patients postpone it as long as possible; the evil may proceed to a very extreme extent if the patient be not watched.

The state of the urinary organs frequently calls for relief. In those distressing cases where toward the end of the disease fistulæ form between the vagina and the bladder, or between the uterus and rectum, or vagina and rectum, but little can be done except to observe great cleanliness. For the relief of the irritability of bladder, Dr. West thinks highly of Vichy water. Uva ursi or pareira, with a little liquor potassæ, are medicines of established utility in such cases. The triticum repens, highly recommended by Sir Henry Thompson in the treatment of cases of irritable bladder in the male sex, will be found useful.

The question as to the propriety of giving, to the patient herself, expression of our opinion as to the prognosis in a case of uterine cancer, is a matter of great delicacy and importance. Even in cases where there is literally no hope

of saving life beyond a limited time, it is yet occasionally difficult and even improper to say so to the patient. There are few individuals possessed of sufficient fortitude to be told, at once, that they must necessarily die; and in many cases to deprive the patient of all hope is to still further shorten her brief existence. It is hardly necessary to urge the importance of abstaining from giving, *in any degree*, an unfavorable prognosis in cases where the diagnosis of cancer is not very well established. Experience has shown that the best observers have been deceived in their prognosis, the case not always turning out so unfavorably as they had expected. It is easy to decide too soon; by waiting a little doubts are gradually dispelled.

The question of the treatment of *cancer of the vagina* and *cancer of the bladder* requires no extended notice. The treatment required in cases of cancer of the vagina is identical with that of cancer of the uterus, the symptoms being essentially the same. Little benefit can be expected from surgical treatment. In *cancer of the bladder*, generally secondary to cancer of the uterus or vagina, the treatment, beyond what is necessary in all cases of cancer, consists in relieving the patient as much as possible from the sufferings attendant on the irritable condition of the bladder usually present, and in providing means for remedying, as far as possible, the inconvenience arising from fistulous openings in the vesico-vaginal septum. Occasionally it has been found necessary to perforate the bladder when the orifice has been occluded by cancerous growths.

ASSOCIATION OF PREGNANCY WITH CARCINOMA OF THE UTERUS.

It occasionally happens that this association is met with, and the various important questions arising out of such association have to be considered.

Recently (on October 11, 1881) the following important case came under my notice:

The patient was 37 years old. She had had five children; the youngest was sixteen months old, but there had been a bad miscarriage ten months ago. The patient was at the time she presented herself to me, again pregnant, probably five months. [It proved to be nearly six months.] The patient was unmistakably affected with epithelioma of the cervix uteri, the vaginal portion being hypertrophied and

presenting a very distinct warty projection running round it like an irregularly shaped cord just outside the orifice of the os uteri, but the tissues above the vaginal portion seemed to be free from infiltration. She was in a very depressed and prostrate condition, having had little sleep, and having suffered from almost continuous pain in the pelvic region for several weeks. There was a brownish irritating and offensive discharge. It was evident that the disease was rapidly progressing, but as yet it was limited to the cervix uteri. The patient had already seen Mr. Spencer Wells, and, in accordance with my advice, a consultation was held with him, the object being to ascertain what was best to be done. One course of action which suggested itself was the speedy induction of abortion, followed as quickly as possible by amputation of the cervix uteri. Another was to remove the whole uterus at once. A third course would have been to allow pregnancy to proceed to the viable period, then to effect delivery, and afterward deal with the cervical disease. The objections to this latter course were that, the disease being in rapid progress, it was probable that delivery *per vias naturales* of a viable child could not be counted on. The cervical infiltration and thickening were fast increasing, and the operation of vaginal delivery would imply laceration of the cervix, and other possible dangers, while in order to secure a live child the Cæsarean section might even be rendered necessary. Moreover, the delay in procedure would allow the patient to be subjected for some time longer to the deadly influence of the disease. The first and second procedures were discussed. On the one hand was the extreme danger of the immediate excision of the whole uterus, giving, however, a better chance, in the event of the patient's surviving the operation, of a considerable prolongation of life. On the other, the possible bad effects of a premature induction of labor, followed by necessity for the further operation of excision of the cervix. Mr. Wells expressed himself very hopefully as to the result of the immediate excision plan; and after due discussion it was resolved that Mr. Wells should undertake the operation. Accordingly, on October 21, 1881, Mr. Spencer Wells extirpated the uterus entire by the abdominal method. The case was reported in full to the Royal Medical and Chirurgical Society, November 22, at which time the patient was reported as quite convalescent from its effects.

The remarkably successful result of this operation, which is the first in which the gravid uterus had been removed entire, in this country, will doubtless encourage further attempts to deal with similar cases in a radical manner. And the opinions expressed on the reading of this case were of a highly approving character. The success of Freund's late operations, together with those of Hégar and Kaltenbach for the removal of the non-gravid carcinomatous uterus, encouraged the adoption on the above occasion of the procedure of removing the whole uterus. The success which has attended what is termed Porro's operation was a further incentive. Porro's operation consists in removal of the uterus from above, in cases of pelvic deformity, and as an alternative to the Cæsarean section; but in Porro's operation the cervix uteri, or the greater part at all events, is not removed. In the case on which Mr. Spencer Wells and myself consulted together, the operation consisted in the removal of the *whole* of the uterus. One of the greatest dangers of the operation is that of injuring the ureters. In Mr. Spencer Wells's method of tearing the uterus away rather than cutting, it seemed to me that this danger was materially reduced.

The conclusion to be drawn from the above case is that the gravid uterus at six months of pregnancy may be entirely removed and the patient recover from the effects of the operation. It is true that the case was a favorable one for operation, but it seems on the whole probable that similar cases are not unlikely to be met with again.

CHAPTER XLIV.

Tubercle of the Uterus: Distension of the Uterus by Fluid (Hydrometra and Hæmatometra) or by Gas (Physometra).

Tubercle of the Uterus.—Pathology and Treatment.
Distension of the Uterus with Fluid (Hydrometra and Hæmatometra).—Pathology and Treatment.
Distension of the Uterus with Gas (Physometra).

TUBERCLE OF THE UTERUS.

This is an exceedingly rare disease. When tubercle is found in the uterus, it is generally present in other organs.

There appears to be a particular and unusual tendency to the formation of tubercle in the uterus after parturition, and during the time the uterus is undergoing that reduction in bulk and change of texture peculiar to this period.

The part of the uterus which is usually the seat of tubercle is the inner surface—when occurring after child-birth, at the seat of the placental insertion—and from the mucous lining it spreads into the thickness of the uterine wall. The final effect may be a considerable increase in the bulk of the uterus. The tubercular matter appears in the form of small grayish or grayish-yellow granulations; the mucous lining is also much thickened and looser in texture than usual. There is a discharge from the uterus of a dirty yellow or brown color. The disease does not appear to be attended with much pain.

Rokitansky relates an important case where acute tuberculosis of the uterus set in in a patient æt. 34, immediately after delivery of an eight months' fœtus,* death occurring at the end of nineteen days. H. Cooper† also details an interesting case in which rupture of the uterus occurred in the third month of pregnancy, due to considerable tuberculosis of the uterus. Mr. Tomlinson‡ relates a case of tuberculosis of the uterus of three years' duration, the patient æt. 55, and the uterus considerably enlarged.

TREATMENT.

Tubercle of the uterus would be treated, in cases where it is detected, on general principles. Careful and good feeding should form an important part of the treatment. Young women recently delivered, and of a phthisical tendency, should be carefully looked after, and great care taken to restore any lost power by suitable diet and regimen. Of the local treatment we can scarcely speak, experience being wanting, but the injection of weak solutions of iodine or bromine into the uterine cavity would probably constitute the best application. It would be requisite to have the os well dilated prior to such a procedure.

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* *Allg. Wien. Zeit.*, 1860, No. 21.
† *Un. Méd.*, 1859, No. 54.
‡ "Obst. Trans.," vol. v.

DISTENSION OF THE UTERUS WITH FLUID (HYDROMETRA AND HÆMATOMETRA).

Apart from pregnancy, an essential part of which is the presence of a considerable quantity of fluid—the liquor amnii—in the uterus, we have cases in which the organ is found to contain fluids in considerable amount. The old terms *hydrometra* and *hæmatometra* implied presence respectively of watery fluid and blood in the uterine cavity.

Accumulations of fluids in the uterus not unfrequently occur in association with closure of the outlet, narrowing and stricture of the cervix, agglutination of the os uteri, flexion of the uterus, tumor in the cervix or lower part of the uterus, the most common of these causes being chronic flexion of the uterus (see Flexions). The quantity of fluid so accumulated in the uterus may be considerable, but ordinarily it is not very great. The due appreciation of these cases is a matter of much practical importance. An offensive persistent leucorrhœa is not uncommonly one of the results of these accumulations of fluid in the uterus.

The most considerable instance of hæmatometra is that met with sometimes in young women soon after the arrival of puberty, and due to retention of menstrual fluid in the uterus, the hymen being imperforate, or the os uteri itself congenitally occluded. Here the uterus may attain such a size as to reach to the umbilicus; the Fallopian tubes are not seldom also distended, and one occasional result is passage of some of the blood into the peritoneal cavity; a more rare event is rupture of the uterus itself into the peritoneum or into the bladder or rectum. Bernutz and Goupil* have devoted much attention to the study of the accidents arising out of these and other effects of menstrual retention.

It is remarkable that the uterus tolerates the presence of a fluid in its interior very differently in different persons. More explainable is the fact that, when the distension is not considerable, it excites more pain and irritation than when the organ is very greatly distended: a small quantity of blood may in cases of dysmenorrhœa give rise to great pain, the uterus acting vigorously to expel it. When, however, the distension is very great, it is usually accompanied by such a degree of thinning of the walls of the uterus, that the organ has little power of contraction left.

* "Clinique Méd. sur les Maladies des Femmes," English translation by Dr. Meadows. (New Syd. Soc.)

As an instance of distension of the uterus from menstrual retention, the following interesting case, recorded by Prall, of Hamburg, may here be quoted: The patient, æt. 43, previously regular, ceased to be so, and simultaneously symptoms of pregnancy set in. At the end of three months the uterus was enlarged, the os occluded, and the uterus contained a quantity of bloody fluid. It was imagined that the case was one of pregnancy with retroversion of the uterus; attempts were made to reduce this, but the force used had the effect at once of relieving the patient and showing the nature of the condition. The pressure employed forced the blood through the occluded os uteri.*

Amputation of the cervix uteri has been followed by hæmatometra. Considerable distension of the uterus with serous fluid is met with chiefly in women advanced in years. An instance of this kind was recorded by Dr. A. T. Thomson, in which the uterus contained eight quarts of a dark-colored brown fluid.†

TREATMENT.

The great object is to evacuate the contents of the uterus. This is not always easily done. When the lips of the os uteri are agglutinated, a careful examination is required to find out the precise situation at which to make a puncture. In such instances the cervical cavity is more or less obliterated, so that the uterine cavity is soon reached. When there is stricture higher up in the cervical cavity, dilatation by means of tents, aided by slight incisions, may be advantageously had recourse to. When the case is one of retroflexion, the restoration of the organ to its normal shape, by pressure on the fundus from below, or by use of the sound, usually suffices to allow the fluid to escape. When the case is one of anteflexion, a suitable mechanical treatment must be adopted (see Flexions).

After evacuation of the fluid, pressure and administration of ergot should be employed to aid the uterus in contracting.

Further remarks on the management of cases of occlusion of the os or cervix uteri will be found in the chapter on Dysmenorrhœa.

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* Schmidt's "Jahrb.," vol cxvi., p. 65. † "Med.-Chir. Trans."

DISTENSION OF THE UTERUS WITH GAS.

Well-authenticated cases of this affection are not many in number, but there can be no question that gaseous accumulations do occasionally take place in the interior of the uterus. The most common condition under which such accumulation has been noticed is the presence within the uterus of a dead fœtus, or portions of the membranes which have been abnormally retained in the uterus after labors or miscarriages. The gas formed in the uterus under these circumstances is the result of the decomposition of the retained matters; it is fœtid; and the uterus at the same time may contain purulent detritus. Further, it appears necessary that, to produce this gaseous distension of the uterus, the orifice of the organ should, having been recently open, have become closed. It seems on the whole probable that, first, air must have obtained admission into the uterus; that, secondly, the os must have become plugged up or closed; and that decomposition must have then occurred, and thus given rise to the gaseous distension now alluded to. That air does frequently pass into the uterus immediately after the expulsion of the fœtus is a fact. It is evident, further, that, irrespective of labor or miscarriage, coagula undergoing decomposition in the uterus may generate gas, which may be retained and accumulate in the uterus, though the number of cases coming under this head are very few compared with those previously described. It has been supposed by some that the lining membrane of the uterus may secrete gas, but there is no proof of this. In many of the cases recorded as cases of gaseous accumulation in the uterus, the only proof of such accumulation has been the passage of flatus from the vagina, which has been erroneously supposed to come from the uterus. In an interesting communication to the Obstetrical Society of London, Dr. Harley * related the particulars of a case where flatus was occasionally expelled from the vagina. He ascertained by experiment that the gas so expelled had been the moment before drawn into the vagina, as he believed, by a spasmodic alternate contraction and relaxation of the recti abdominis muscles. Dr. Gooch mentions a case in which the patient only expelled flatus while not pregnant, the expulsion ceasing when she became impregnated, and he cited this to prove that the flatus must have come from

* "Obst. Trans.," vol. iv.

the uterus. This fact, however, affords no absolute proof of the truth of the explanation for which Dr. Gooch contends. It was more probably a case, such as that observed by Dr. Harley, of alternate admission and expulsion of air from the vagina.*

TREATMENT.

The obvious cure for this condition would be the evacuation of the gas by means of a long gum-elastic or other rigid tube, which would have to be introduced carefully through the cervix uteri. A tight bandage and cold affusions externally would be useful subsequently.

CHAPTER XLV.

Diseases of the Fallopian Tubes.

Tumors of the Fallopian Tubes, Fibroid, Tuberculous—Cyst Formations—Distension of the Tube with Fluid—Distension of the Tube with Blood—Puriform Accumulations in the Tubes—Fallopian Pregnancy—Treatment.

The diseases of the Fallopian tubes do not very frequently present themselves before us during life, although various alterations are often observed after death in reference to the shape, position, permeability, etc., of these ducts. The following comprise the more important of these abnormal conditions:

TUMORS OF THE FALLOPIAN TUBES.

Fibroid growths may be found in such a position as to block up the passage, and occlusion of the tube sometimes thus results. *Tubercle* of the tubes has been met with, so also *cancer*. *Cyst formations* are more doubtful: they might readily be confounded with distension of the tubes themselves.

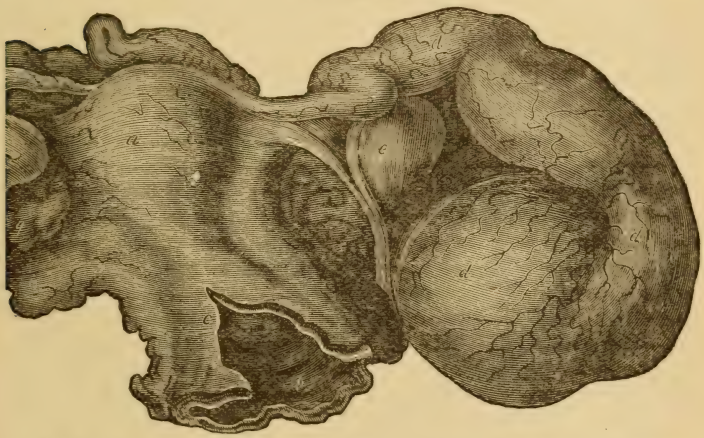
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* See also a paper on this subject by Dr. Rasch, "Obst. Trans.," vol. xii., p. 281.

DISTENSION OF THE TUBE WITH FLUID (FALLOPIAN DROPSY.)

Tumors constituted by distension of one or both tubes with fluid are not so very uncommon. They are met with chiefly in old people, and are accompanied with closure of one or both extremities of the tube. The quantity of fluid may be so great as to distend the tube to the size of the fœtal head or even larger (see Fig. 200 from Hooper). The fluid itself is usually of a watery character mingled with flaky substances of varying consistence. It is a curious circumstance that both tubes have been found simultaneously

FIG. 200.*



and about equally affected. One point of interest in connection with the subject is the physical resemblance between such tumors and cystic tumors of the ovary.

BLOOD ACCUMULATIONS IN THE FALLOPIAN TUBES.

The Fallopian tubes are not very unfrequently distended with blood to a slight extent in women during menstrual life. In some such cases the blood so accumulated finds its way into the peritoneal cavity (see Peri-uterine Hæmatocele). The blood may have three sources, viz., the uterus itself, the lining of the tube, or the Graafian follicle. It

* Fig. 200 (after Hooper), Fallopian dropsy.

may be produced by imperforate hymen, or by imperforate os uteri, and may occur in all cases when the outlet of the uterus below is occluded in any way. Thus it may be associated with menstrual retention; the blood secreted in the uterus, or in the tube itself, or possibly blood arising from the ovary, distending the tube in common with the uterus. In a case of menstrual retention with distension of the uterus, a tumor in the pelvis by the side of the uterus, and having the shape of the enlarged Fallopian tube, would suggest distension of the tube with blood. But the Fallopian tube may be distended with blood in cases where there is no distension of the uterus of a like character. A fibroid tumor situated at the junction of the tube and the uterus, and blocking up the canal, was the cause of the distension in a case related by Favel, and quoted by Bernutz and Goupil.* Occlusion of the tube at this situation from other causes may doubtless produce the same result. Dr. Farre states that he has found accumulations of blood in tubes closed at both ends, and in cases where death has occurred during a menstrual period; conclusively showing, according to his opinion, that the menstrual fluid is supplied in part by the wall of the Fallopian tube.†

PURIFORM ACCUMULATIONS IN THE FALLOPIAN TUBES.

These are the result of inflammatory action in the tubes or the uterus; the period of childbed is the one during which such formations are most liable to occur, but they may follow inflammation of the uterus, or result from operations on the generative organs; they may occur idiopathically, and in connection with chronic inflammation of the interior of the uterus; they may also result from stricture of the os uteri, whereby escape of fluid formed in the uterus is prevented. In the puerperal class of cases, pus may collect in and distend the Fallopian tubes, and may finally regurgitate into the peritoneal cavity. This is one of the modes of origin of puerperal peritonitis.‡

PAPILLOMA OF THE FALLOPIAN TUBE.

An interesting case is related by Mr. Alban Doran § in "Pathological Transactions," of the following kind:

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* *Op. cit.*, tom. i., p. 168. † *Op. cit.*, p. 618.

‡ See an interesting paper on this subject by Dr. Barnes, "Obst. Trans.," vol. iii., p. 419.

§ "Path. Trans.," vol. xxxi.

The patient, single, æt. 50, had suffered from menorrhagia after amenorrhœa, next symptoms of inflammation of right ovary. Then followed pleural effusion requiring tapping; after that ascites. She was tapped four times for the ascites. After the last tapping a hard nodular mass was found by Mr. Spencer Wells behind the uterus. An operation was performed, and, after removal of seventeen pints of fluid, an orange-sized tumor, consisting of the greater part of the right Fallopian tube, was removed, together with the adjacent adherent ovary. Recovery occurred. The tumor consisted of an elongated oval tumor three and a half by two inches, and was found to be the Fallopian tube dilated and filled with cauliflower excrescences, covered with a mucoid secretion, which issued from the fimbriated extremity where there was a bristle-sized aperture. The excrescences grew from all parts of the dilated tube; they were covered with columnar epithelium. Mr. Doran considers the specimen as an unusually large example of a growth recognized before by Rokitansky and Hennig, and he believes they are produced by chronic inflammation. The secretion from the tube irritated the peritoneum, and caused ascites.

FALLOPIAN PREGNANCY.

This is to be considered a disease, and generally a fatal one. But the subject is one which falls out of our province. Rupture of the tube and fatal abdominal hæmorrhage are the usual results.

TREATMENT OF DISEASES OF THE FALLOPIAN TUBES.

In some cases serous collections within the Fallopian tubes have been evacuated by means of a fine trochar and canula through the vagina.

The cases are few, however, in which surgical procedures are likely to be adopted, in consequence of the comparative rarity of disease in this locality, and also in consequence of the difficulty of their diagnosis. The case above related in which Mr. Spencer Wells excised a dilated tube is a very interesting and exceptional one.

A curious case is recorded by Dr. Baumgärtner, of Baden Baden.* A patient who had had ovariotomy performed, and

* "Berlin. Kl. Woch.," 1879.

subsequently gastrotomy, in order to relieve pain produced by adhesion of pedicle to bladder, became, later on, affected by a quite unendurable pain in the ovarian region. Gastrotomy was a third time performed, and the right Fallopian tube, being found distended and on the point of bursting, was removed, together with the ovary. Cure.

In cases where the tubes are distended with pus, as in a case of puerperal metritis, great care would be required to maintain rest, lest the contents of the tube be poured out into the abdominal cavity.

In cases of *Fallopian pregnancy*, if it were possible to make an exact diagnosis of these cases of rupture and hæmorrhage during life, it would undoubtedly be better to open the abdomen and endeavor to secure the bleeding vessels, than to allow the patient to die from hæmorrhage. No operation of the kind has ever been attempted, but the subject has formed matter of discussion on more than one occasion at meetings of the Obstetrical Society of London. The chief difficulty lies in the diagnosis, for, until the patient is dead, the real nature of the case is not generally detected; such at least, has been the experience of most practitioners. Increased accuracy of diagnosis of the diseases of the female generative organs may, perhaps, result in the more frequent recognition of this formidable accident sufficiently early for measures to be devised and carried out by which life may be saved.

[Extra-uterine pregnancy is interstitial, Fallopian, or abdominal, according to the place at which the ovum is arrested in its transit from the ovary. It is always attended with danger to life. When true Fallopian, it usually terminates in rupture and death by hæmorrhage from the sixth to the twelfth week, often even before we are aware of its existence. If, at the end of the third month, we should diagnose it as interstitial we can afford to wait and watch and be guided by circumstances. If we are able to diagnose it as Fallopian or abdominal the proper course of treatment then becomes a question. In the early stages the electric current has been used to kill the fœtus—also aspiration for the same purpose. I now have under my care a case of abdominal pregnancy in which the electric shock was given by our well-known electrician Dr. A. D. Rockwell. The fœtus was probably killed the first time the current was used, but it was thought best to repeat it three or four

times in order to make sure of it. The sac diminished in size very rapidly, and is now being gradually absorbed. For a clear account of the method of using the current in these cases I would refer the reader to the third edition of Dr. Rockwell's book on Medical Electricity.

Dr. Thomas has had a larger experience in the treatment of extra-uterine pregnancy than any amongst us. He has seen in consultation five deaths from rupture, two from septicæmia (one after aspiration and the other after incision), and has had one recovery after operation through vaginal *cul de sac* with galvanic cautery, and three recoveries by abdominal section. Lawson Tait has operated six times by abdominal section for extra-uterine pregnancy, and five of the cases recovered. The sixth failed only because undertaken too late. His method of operating is by stitching the incised walls of the sac to the edges of the abdominal incision, after having removed the fœtus, and then introducing a drainage tube. This plan he adopted after the method introduced by my father in cholecystotomy. The success of Lawson Tait augurs well for the future treatment of advanced stages of extra-uterine pregnancy.]

CHAPTER XLVI.

Diseases of the Ovaries—Ovaritis—Displacement of the Ovary—Neuroses—Battey's Operation.

Acute Ovaritis and Abscess of the Ovary.
Chronic Ovaritis.—Obstructed Ovulation, its Effects and Causes—Changes in the Graafian Follicles—Congestion of the Ovary—Effects of long-standing Chronic Ovaritis—Etiology, Sexual Excesses—Gonorrhœal Disease—Symptoms and Signs of Chronic Ovaritis—Pain, Tenderness to Touch—Diagnostic Signs.
Treatment of Acute Ovaritis—Treatment of Chronic Ovaritis—General Measures—Battey's Operation, Cases for which it is suited.
Displacement of the Ovary.—Symptoms, Treatment.
Neuroses of the Ovary.—Mental Disturbances—Neuralgia—Nymphomania—Hysteria and Hystero-Epilepsy.
Battey's Operation.—Historical and Statistical Criticism.

ACUTE OVARITIS AND ABSCESS OF THE OVARY.

This is a condition rarely met with in practice. Sudden suppression of the menses, from chilled or wetted feet, has

appeared to lead to it, but such an occurrence is extremely rare. In connection with the puerperal state it is more common; we then generally find it associated with a pyæmic condition, with inflammation of the uterus, and marked changes in the large uterine veins. Pelvic abscess, which may follow on parturition, or on any operative procedure on the generative organs, generally begins in the neighborhood of the ovary, and may involve this organ. Acute inflammation and abscess of a previously healthy ovary is a condition hardly known. But when the ovary is affected with cystic disease the cysts may inflame and suppurate.

CHRONIC OVARITIS.

The process of ovulation involves rupture of the surface of the Graafian follicle, passage of its contents into the Fallopian tube, and subsequent closure of the opening (see p. 50, vol. i.). This physiological process is liable to be disturbed. Thus the rupture may be impeded by previous inflammatory thickening of the surface of the ovary. This thickening may be produced by previous pelvic inflammatory action, which latter may be set up in many ways. Pelviperitonitis (Bernutz and Goupil) is a condition which may be produced by escape of blood from the ovary or secretions from the Fallopian tubes into the peritoneal cavity near the ovary, the ovipont being disturbed, and probably in other ways also. False membranes thus originating may obstruct ovulation or may disturb the normal ovipont.

When ovulation is obstructed, as a result of this other changes are likely to occur in the ovary itself—swelling, turgescence, thickening, degeneration, and other changes in the stroma of the ovary itself; and in process of time the result may be that the ovary is contracted, diseased in various ways, and the healthy development, maturation, and dehiscence of Graafian follicles materially interfered with. Doubtless also in some cases morbid actions originating in the stroma of the ovary give rise to alterations in the tissues of the organ. The Graafian follicles may become diseased before they reach the surface, or disease may attack them during their retrogressive changes. In some cases the ovarian stroma becomes broken up, atrophied, the ovary as a whole losing its proper shape and definite outline, and becoming fused as it were into the

adjacent tissues by exudation formed over the ovary, the result of intra-ovarian or extra-ovarian morbid action.

Chronic ovaritis is a term which is employed to designate the various morbid processes enumerated in the foregoing paragraphs. Negrier * described the morbid changes in the follicles as "vesiculitis."

Thus, obstructed ovulation may set up disease either in the Graafian follicles or in the intermediate ovarian stroma. The term "chronic ovaritis," as now employed, covers most of the morbid processes liable to occur in the ovary. It seems probable that the more common cystic diseases of the ovary have their origin in that form of ovaritis which is associated with obstructed ovulation. Facts which have come under my own notice lead me to suspect that chills during the process of menstruation are not unfrequently the cause of serious subsequent disease, the primary effect being folliculitis in that one particular Graafian follicle which is most enlarged and developed, and which is at or near the period of dehiscence at the time the chill is experienced.

Congestion of the ovary is a condition which precedes chronic ovaritis. The congestion may affect the whole organ, increasing its size and weight. Clinically it is a condition not frequently met with unless in cases where the ovary has become displaced. Cases are recorded, however, in which congestion, softening, and a semi-pulpy condition of the ovary have been met with after death.

A very important element in cases of chronic ovaritis is the condition of the nutritional functions. Thus, if the patient be tuberculous, the character of the ovaritis will probably be much affected thereby. Feebleness and weakness from any cause also will be likely to intensify it, and even to initiate it. A low form of chronic inflammatory action is liable to be set up under such circumstances, and normal ovulation does not occur, either because the false membranes or adhesions prevent the access of the fimbriæ of the Fallopian tubes to the ovary, or because the fimbriæ are diseased or fixed, or because the ovary itself has either superficially or deeply undergone chronic inflammatory changes.

Other facts in connection with the history of chronic

* "Recueil des Faits pour servir à l'Histoire des Ovaires et des Affections Hystériques de la Femme," Angers, 1858.

ovaritis have now to be stated. When the malady has existed for some time, the pain and distress thereby directly or indirectly produced is so great that the patient falls into a state of health of a very deplorable character. The misery involved in the continuance of the ovarian function under such circumstances led Dr. Battey of Georgia, U. S. of America, to adopt the plan of extirpating the ovaries in such cases. Cases of this advanced character are not very common. And it is very important to distinguish between severe cases of chronic ovaritis and chronic severe dysmenorrhœa due to some morbid condition of the uterus. The distinction is by no means easy in all cases.

Etiology.—Sexual excesses not unfrequently occasion chronic ovaritis. Sterility occurs as a further result of such excesses, the effect of which is probably to produce serious disturbances in the healthy maturation of Graafian follicles, to lead to their premature bursting, and to give rise to occasional failures of the ovipont—*i.e.*, to escape of the contents of the follicles into the peritoneal cavity, and consequent irritation at that spot. Chills during menstruation, whether producing actual suppression of the catamenia or falling short of this, are undoubted causes of ovaritis. Exalted functional activity of the ovaries, which may be induced by defective moral training or early addiction to bad habits, may lead to serious chronic ovaritis.

Chronic congestion of the uterus is frequently accompanied by chronic ovaritis.

Gonorrhœal disease is undoubtedly a cause in some cases of ovarian disease. Ovaritis of gonorrhœal origin is liable to produce chronic inflammatory action in the ovary itself, but more particularly in the peritoneum near the ovary. Chronic pelvi-peritonitis with chronic ovaritis of a very serious and troublesome character may thus originate.

Symptoms and Signs.—A common symptom is *pain* in the ovarian region.

The presence of pain in the ovarian region does not, however, prove that the ovaries are diseased, nor does it prove that they are even the seat of inflammation or irritation. Pain in these regions is more often due to disease of the uterus than to disease of the ovaries. Pain during menstruation also is much more commonly due to disorder of the uterus. In the chapters on Uterine Flexions and on Dysmenorrhœa this question has been fully discussed.

There is no doubt that cases present themselves, though

probably comparatively few in number, in which the pain is really connected with the ovaries, and arises very possibly from what may be termed *difficult ovulation.*

To this class of cases possibly belong those which Dr. Priestley has described, in which, intermediate between the regular menstrual periods, there is felt every month a peculiar pain like that experienced at the monthly times, but without discharge. These are probably cases of difficult ovipont.

Tenderness of the Ovary to the Touch.—A vaginal or rectal examination is the best means for detecting actual ovarian tenderness. When the ovary is actually sensitive to the touch and persistently so, when it is manifestly swollen, the evidences are decided as to the presence of ovaritis. But tenderness and swelling are not always present. In some cases we find the ovary markedly hard, irregular to the touch and smaller than usual, or it may be indistinguishable on careful double examination, owing to chronic inflammatory action having fused it to adjacent tissues.

Tenderness in the lateral hypogastric or supra-inguinal region is, according to my experience, not by any means a sign of ovaritis. Pressure in this spot may give pain, but it may be found that on an internal examination the ovary is not tender at all to the touch. Supra-inguinal tenderness and swelling are really most commonly due to anteflexion of the uterus. This is a fact which I have verified by repeated observation, and it is a most important one, for it has been held heretofore to indicate the presence of ovaritis. When ovaritis or ovarian congestion are really present, there is no doubt supra-inguinal tenderness liable to be observed: this is not disputed. Further, when pelviperitonitis is present, tenderness in the supra-inguinal region is liable to be noticed. The same remark applies to *swelling* in the supra-inguinal region. A tympanitic slight swelling is very liable to be observed in this region, particularly in cases of anteflexion, also in cases of pelvi-peritonitis. This swelling is not necessarily indicative of ovaritis. I have supposed it to be due to irritation of the peritoneum, produced by traction or stretching of the round ligament, consequent on the altered position of the uterus.

In cases of *acute* inflammation of the ovary, entire rest is essential. Leeches should be used in cases where the attack depends on a sudden chill, followed by warm and

moist applications. In cases where gonorrhœal infection is believed to be the source of the mischief, leeches might still be useful at first, specific remedies being given later. When a puerperal cause is present depletion is not indicated; the case is one of, or tending toward, septicæmia, and the indication is to support the strength of the patient, rather than to remove blood. Rest, warmth by means of hot turpentine stupes, and a stimulating and nourishing diet, should be had recourse to.

Cases of *chronic ovaritis* must be treated with a view to the special requirements of the patient. In some cases immoderate sexual excitement has to be corrected, and a moral treatment enforced. The tendency to congestion of the ovaries may be diminished also under these circumstances by employment of cold affusions over the hips and lower part of the abdomen, by remedies and a regimen calculated to call the other functions of the body into active exercise. If there be no tendency to uterine displacement or flexion, the gymnasium, or equestrian exercise, or some active mental employment, necessitating also a tolerable amount of walking, may be recommended. Exercise is, under these circumstances, almost always attended with some degree of pain, and it is frequently necessary to keep the patient at rest for a time, before commencing exercise to any great extent.

Functional rest is more or less required in all cases. At the menstrual periods the patient should be ordered to remain on the couch or in bed, the apartment kept cool, and stimulating nourishment avoided.

Counter-irritation and sedatives constitute on the whole the best treatment for the ordinary run of cases. A tartar-emetic ointment, or a liniment containing croton oil, may be rubbed in night and morning over the ovarian regions, and opiates sufficiently strong to relieve pain ordered. One pill containing half a grain of opium, a third of a grain of extract of Indian hemp, and one grain of camphor may be given night and morning. Care should be taken that the bowels are relieved each day.

"Battey's operation" is a resource available in cases of advanced or incurable chronic ovaritis. It has been performed for other reasons, but with those we are not concerned in this place. It would appear that it is indicated more particularly in cases where there is chronic ovaritis due to obstructed ovulation, from whatever cause, where other treatment has proved ineffectual. It will probably

be employed in some rare cases where the continuance of the function of the ovaries is unbearable in consequence of incurable uterine disease. At present the ovaries appear to be credited with more than is their due in the origination (directly, at least), in that state of things for which Battey's operation has been put in practice, but these cases will no doubt be more carefully discriminated in the future.

DISPLACEMENT OF THE OVARY.

The ovary is sometimes found to have left its ordinary position and fallen downward, generally in the middle line, in the Douglas pouch. It there constitutes a tumor plainly distinguishable by vaginal examination, having the shape and size of the ovary, but not seldom much increased in size. It is usually very painful and sensitive to the touch. The causes of this prolapsus or descent of the ovary are various, but the most common cause appears to be retroflexion of the uterus. The fundus uteri may drag on the ovary, or the violent straining in defæcation which retroflexion sometimes occasions may be the event determining the displacement. Having become prolapsed, the ovary may either remain in a mobile condition, or it may become adherent and fixed in its altered position by inflammatory exudation.

The symptoms produced by prolapsus of the ovary are, as a rule, very marked, and sometimes very severe. They consist in pain attendant on defæcation often amounting to torture, pain on walking, and general discomforts of various kinds. The symptoms, in fact, resemble very much those due to severe retroflexion of the uterus. And when the two conditions—ovarian prolapse and retroflexion—are associated, the symptoms may be doubly intense. Various nervous reflex symptoms—*e.g.*, severe hysterical phenomena —may be observed.

The treatment of prolapse of the ovary is sometimes a simple matter. Thus, if it be due to retroflexion of the uterus, and the ovary be free to move, a Hodge pessary may be found to be the cure for both displacements. But if the ovary be adherent, and, as it often is under such circumstances, inflamed, efficacious treatment is very difficult. The primary object should be to replace the prolapsed organ, and remove it from this very inconvenient position, which may be best done by some modification of the

Hodge-shaped pessary carefully padded in the part liable to touch the ovary, or by a simple india-rubber ring pessary. Complete rest would be required while the inflamed and displaced ovary is thus being gradually pushed upward out of the Douglas pouch, and the use of the pessary would be necessary for a considerable time to prevent liability to return of the displacement.

In certain severe cases Battey's operation has been performed, and the ovaries extirpated for the cure of this displacement. Up to the year 1881 five such cases had been recorded.*

NEUROSES OF THE OVARY.

Cases not very uncommonly present themselves in practice in which a neurosis is present, traceable to some excitation or irritation in the generative organs. The ovary and the uterus are the two principal organs, and the question arises whether the affection has its origin in the one or the other of these two principal locations.

The question has already been discussed at some length (see p. 124), and the share which the uterus has in the origination of these maladies has been defined. It remains to be stated what share the ovaries have in the origination of neuroses.

When the ovarian functions come to an end, or are in abeyance, uterine neuroses disappear or become much lessened in their intensity. But ovarian neuroses and uterine neuroses are nevertheless distinct the one from the other.

The ovaries appear to be the predominant organs in the female economy. One thing, at all events, is certain, that fecundation is inseparably connected with their existence and healthy activity. It does not appear, however, that menstruation is always arrested when the ovaries are removed, and evidence seems to show that the exercise of sexual relations is not materially altered when double ovariotomy has been performed.

As regards purely *mental* disturbances the evidence as to the influence of the ovaries is directly contradictory. For mania is stated to have been cured in some cases after the performance of ovariotomy, and to have been unrelieved in other cases when the operation was performed.

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* See Battey's Report, Int. Med. Congress, 1881.

Chronic neuralgia of the ovaries is, perhaps, the most definite of the neurotic affections traceable directly to the ovary, but cases of this kind are, in my opinion, much more rare than is generally supposed; in many supposed cases of this kind the pain located near the ovary is due to some morbid condition of the uterus (see p. 329). Still, some cases probably remain which may truly be called neuralgia of the ovary (coupled with chronic ovaritis, etc.).

Nymphomania has been supposed to have its origin in some morbid condition of the ovaries. Possibly it is the case in some instances. In cases which have come under my notice, where undue sexual excitability was present, the condition with which I have found it associated in some marked instances has been acute anteflexion of the uterus; and that it depended on the uterine condition was proved by the cure of the one following the cure of the other.

Hysteria, Hysterical Attacks, Hystero-epilepsy.—The ovarian source of these affections is a doctrine which has of late years been credited to a large extent, chiefly owing to the writings of Negrier, Charcot, and others. It rests on a very frail foundation. The clinical evidence which I have been able to collect is directly in favor of the uterine origin of these affections (see p. 142). In so far as the ovary controls the uterus these affections may be said to be under the influence of the ovaries. It is conceivable that the ovaries may have a direct originating influence in some cases, but the clinical evidence in the cases observed by myself was not suggestive of this mode of origin. Cases have been observed in which removal of the ovaries has put an end to hystero-epilepsy, but this does not in any way prove that disease of the ovaries was in those cases the exciting cause of the affection.

BATTEY'S OPERATION (OÖPHORECTOMY).

The operation now by universal consent designated as "Battey's operation" was first suggested by Dr. James Blundell. It was first actually performed by Hègar, July, 1872. Dr. Battey of Rome, Georgia, U. S. of America, performed it a few days later, in August, 1872, and without knowing of its previous performance by Hègar. Dr. Battey immediately published an account of his first case, and of the principles which induced him to perform the operation, and very shortly after proceeded to perform other

similar operations; and although not actually the first operator, he was the first to enunciate and popularize the principle of the operation. In actual priority, however, of performance, Percival Pott was the first to perform double ovariotomy of normal ovaries. This was in a young woman of 24, in whom the ovaries formed tumors in the groins, and interfered with her getting her livelihood.

Battey's operation is defined by the author to be "an operation for the removal of the normal human ovaries, with a view to establish at once 'the change of life,' for the effectual remedy of certain otherwise incurable maladies." *

His first operation was performed on August 17, 1872. The patient, single, æt. 30, had been seven years under treatment for amenorrhœa, accompanied by very severe menstrual molimina and suffering, which had been experienced since the age of 16. She had never had more than two proper catamenial periods. She suffered from frequent hæmorrhage from the stomach and rectum, attacks of hæmatocele, abscesses, extreme debility, and a generally miserable state of existence. The uterus had been dilated and treated with some slight benefit, but no real improvement. The patient gladly accepted the proposal to remove the ovaries. This operation was successfully performed after abdominal section. The pedicles were ligatured and dropped. The cure was complete, and a principle thus established, quite novel in medical treatment, and which is no doubt destined to prove a most valuable addition to the resources of the medical art.

In Battey's first operation the ovaries were extracted by median abdominal section. Battey's next operations were performed differently, the vaginal operation being adopted. The "direct lateral" method of abdominal operation was adopted in some cases by Hègar and Langenbeck. Of late, however, the vaginal method has fallen into disrepute, and the abdominal method is now generally considered preferable. Again, in several cases the plan of removing but one ovary was adopted, even in some of Battey's own cases, thus, as Dr. Marion Sims truly remarks, "departing from the rule laid down for his guidance at the start." The result of these incomplete operations has not been favorable.

Among operators who have contributed, up to 1881, to

* "Normal Ovariotomy."—*Atlanta Med. and Surg. Journ.*, Sept., 1872.

the experience of the new procedure must be mentioned, Hègar (42 operations), Battey (16), Marion Sims, Savage (25 cases), Lawson Tait (30 cases), Engelmann, Schroeder, Pallen, Noeggerath, Alex. A. Simpson, Goodell, Heywood Smith, and others. Since 1872 the operation has been performed many times. At the recent International Medical Congress held in London, Dr. Battey, who was present, brought forward statistics of the operation up to the date of the Congress (1881), including operations by himself and others, as follows:

Complete operations (both ovaries removed).....	193
Incomplete cases (one ovary removed, or both imperfectly removed).....	25
	218
Of the total cases, 18 per cent died.....	40
" 82 per cent recovered.....	178

Of the ultimate results reported—

Complete operations, cured.....	88	or 72 per cent.
" benefitted.....	22	" 19 "
" not benefitted....	11	" 9 "
Incomplete operations, cured.....	6	" 26 "
" benefitted.....	10	" 44 "
" not benefitted...	5	" 22 "
" not stated.....	2	" 8 "

In the tabulated list given by Dr. Battey there is a column stating the "indications for the operation." I have summarized the cases as acurately as circumstances admit:

Myoma, or uterine tumor.....	38	cases
Ovaralgia, or ovarian dysmenorrhœa..... 39		
Dysmenorrhœa, or pernicious menstruation.. 30	85	"
Chronic ovaritis..... 16		
Hystero-epilepsy, or reflex neuroses.....	32	"
Prolapsed or dislocated ovary.....	5	"

In several cases the "indications" are omitted; the others, tabulated, are miscellaneous in character—Mania, incurable uterine disease, chronic pelvic inflammation, menorrhagia, etc. The above includes over three fourths of the whole cases, and represents the indications for the operation in the majority of the cases hitherto actually dealt with.

A careful examination of the actual records of cases of Battey's operation shows that a short tabulated account, such as that of which a summary is given above, conveys

an extremely imperfect idea of the real nature of the cases; and it would seem that it is often an accident as to which of the symptoms present is selected to represent the case in the tables. Take, for instance, Dr. Marion Sims's "incomplete" cases—we find six cases recorded as cases of "ovaralgia," one of these coupled with "enteralgia," another with "dysmenorrhœa." Now, the full records of these cases published by Dr. Marion Sims state that in the first there was retroflexion of the uterus, in the second retroversion, in the third stenosis of the cervix uteri, in the fourth anteflexion, in the fifth retroflexion, in the sixth retroflexion. Yet in the tabulated list the indications are stated as being "ovaralgia." Plainly, therefore, these particular cases are open to the criticism that the uterine distortion was not improbably the cause of the suffering from which relief was sought by Battey's operation.

The same objection applies with more or less completeness to other cases in which ovaralgia, dysmenorrhœa, chronic ovaritis, etc., formed the stated indications for the operation. These terms are not sufficiently definite to meet the present scientific requirements, nor sufficient to guide future action in regard to this operation. It is certain that in some, at least, of the cases which have been submitted to the operation the patient was suffering from disease of the uterus, which might have been successfully treated and without undergoing the mutilation implied in its performance. From what I have seen in practice, and from what I know of the natural history of the disease of the uterus, it is perfectly certain to my mind that many cases of severe anteflexion of the uterus or marked retroflexion of this organ are included in the published list above alluded to, but they figure there under other heads and under different designations. It is a very curious fact that out of the 218 cases there are only four in which retroversion or retroflexion of the uterus is mentioned at all in the *tabulated* list, and there is no mention of anteflexion whatever.

The difficulties and dangers of Battey's operation may here be mentioned.

The operation is simple, as Engelmann points out, when the pelvic viscera are normal, the broad ligaments lax, the ovaries free from adhesion and not degenerated. But these conditions are not usually present in the cases requiring the operation. When the ovaries are degenerated or adherent, owing to the deep position they occupy, it is not

easy to isolate them from adjacent tissues and to securely fix the necessary ligatures. And when the operation is done in cases of tumors of the uterus, such tumors are much in the way and may prevent easy access to the ovary on one or the other side.

Battey's operation, as defined by himself (and there seems no reason to amend that definition), is "for the effectual remedy of certain otherwise incurable maladies." The diseases to be dealt with by it are therefore such as have been subjected fruitlessly to other methods of treatment.

The objections to the operation are strong ones, and they are such that it is hardly likely the operation will in time to come be much abused, for by it the patient is, of course, effectually prevented becoming a mother, though it does not appear that, as was at first objected, the operation unfits the subject of it for marital duties.

The largest number of cases hitherto operated on have been cases in which menstruation was painful, or difficult, or both, and attended with other grave and troublesome symptoms, and in many cases in which it was conjectured that the ovaries were actually the seat of disease.

In reference to this class of cases, future decisions in regard to the performance of the operation will depend on the curability or not of the menstrual derangement or difficulty. It has been already pointed out that in all probability the organ most at fault in some of the cases reported was the uterus rather than the ovaries, and it is to be expected that in a large proportion of these "uterine" cases the operation will not prove to be necessary when more attention and time can be given to the cure of the uterine disorder. It is true that in some of these very cases the malady, by its long standing and chronicity, is virtually incurable. Such will be proper cases for Battey's operation.

There are two methods of performing Battey's operation —from the vagina or by the ordinary operation, such as for ovariotomy, through the abdominal wall. There appears every reason for the belief that the vaginal method, though it has been successfully performed, will not be extensively employed in the future (see Operation of Ovariotomy in a later chapter).

CHAPTER XLVII.

DISEASES OF THE OVARIES—(*continued*).

CYSTIC AND OTHER TUMORS OF THE OVARIES AND BROAD LIGAMENTS.—PATHOLOGY.

CYSTIC AFFECTIONS OF THE OVARY AND BROAD LIGAMENTS.—Hydatid Cysts—Cysts of the Broad Ligaments (Wolffian Cysts)—OVARIAN CYSTS PROPER.—General Characters—Origin—Varieties of Arrangement: Simple, Secondary, Tertiary, Multiple, Composite—Cysto-sarcoma, Alveolar, Adenoid, or Glandular Tumor—Cysto-carcinoma, Dermoid—Shape and Consistence of Cysts—Their Lining and Contents—Dermoid Cysts: Nature and Structure—Compound and Composite Ovarian Tumors: Structure and Contents—Solid Tumors of the Ovary enumerated—Natural History of Ovarian Tumors and Ovarian Dropsy as Data for Prognosis and Treatment—Mode in which Life is destroyed—Complications with Pregnancy.

The *cystic affections of the ovaries and broad ligaments* are of great interest and importance. They are frequently most serious in their results, their diagnosis is often a matter of great difficulty, and it is only within a quite recent period that medical science has been able to grapple with them in any degree satisfactorily. For clinical reasons the cyst affections of the ovaries and of the broad ligaments will be considered side by side, but they are of course essentially different both in nature and origin.

We have to consider *seriatim*—

Hydatid cysts.

Cysts of the broad ligament, sometimes termed Wolffian cysts.

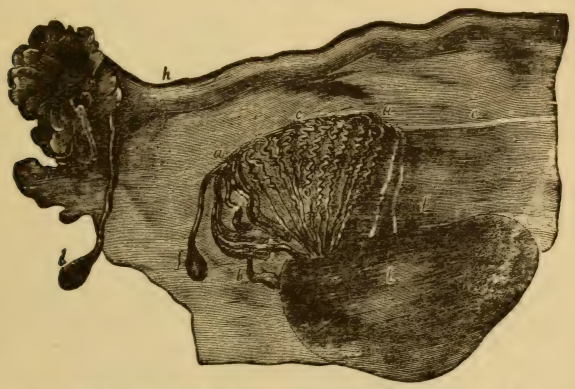
Proper ovarian cysts, of which there are several varieties, including the cysts met with in what is termed "ovarian dropsy," "dermoid cysts," etc.

Hydatid cysts are sometimes met with on the outer surface of the ovary, or attached to the peritoneum in the neighborhood. The size of such cysts does not ever probably much exceed that of a large orange. They have the ordinary character of hydatid cysts, such as are found in other localities. They—probably almost constantly—originate in the liver, escaping from an hydatid tumor of the liver containing them, into the peritoneal cavity.

Cysts of the Broad Ligament (*Wolffian cysts*).—The formation of large cysts on the surface of the broad ligament,

and quite unconnected with the ovary, is well substantiated. These cysts are usually single and quite simple. They originate probably in the little tubules or terminal cyst-like bodies (see *f b i* in Fig. 201, from Kobelt) found near the fimbriæ of the Fallopian tubes and close to the ovary. The structures in which they originate are the remains of the tubules of the Wolffian body. The cysts of the broad ligaments rarely attain a size exceeding that of an orange, their course is ordinarily very slow, and the inconvenience they occasion is consequently not great. Now and then, however, they attain a large size. Thus Mr. Spencer Wells *

FIG. 201.†



mentions a case in which the cyst was twice the size of the adult head. It was removed from a patient æt. 20. Dr. Wynn Williams exhibited at the Obstetrical Society‡ a very large single cyst, partly removed during life from the abdomen, which was referred to me for examination. It was a single large simple cyst 24 inches in circumference, and the conclusion arrived at was, that it had originated in the broad ligament. The walls of the cyst were $\frac{3}{16}$ of an inch thick, it had undergone inflammatory changes within, and consequent thickening, and had become adherent superiorly to the diaphragm. The abdomen had been enlarged in

* "On Diseases of the Ovaries," vol. i., p. 239.

† Fig. 201 (from Kobelt) represents the parovarium with its terminal cysts.

‡ See "Obst. Trans.," vol. viii., for 1866.

this latter case for several years. I have myself successfully removed by the operation for ovariotomy a cyst as large as this last, and it appeared to be of similar character. The patient had had children, and her age was over 50. The duration of the tumor was in this case over four years. In another case I removed along with a large true ovarian tumor two such cysts, one the size of a large walnut.

The *age* at which they occur with the greatest frequency is between 20 and 40.

OVARIAN CYSTS (PROPER).

Ovarian cysts occur of all sizes, from one of microscopic

FIG. 202.*



minuteness to one of sufficient size to distend the abdomen to the utmost.

One ovary alone may be diseased; sometimes both are affected.

They occur sometimes singly; in most cases, however, when the ovary takes on cystic disease, more than one, generally many, cystic growths are found associated.

They contain fluid, or a semi-fluid or jelly-like material, or together with this a growth more or less firm and solid. They may undergo, like other structures, inflammatory

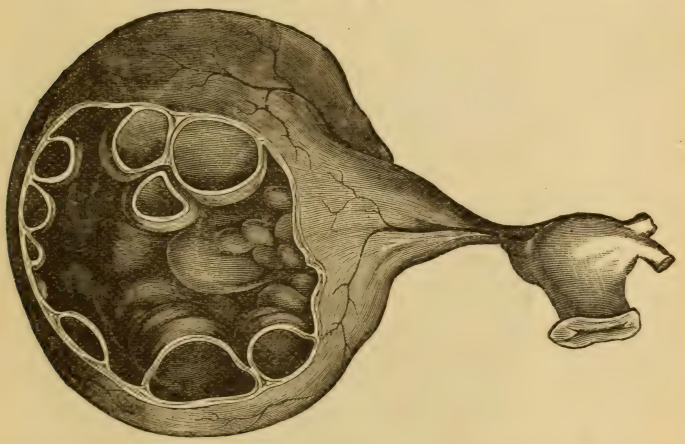
* Fig. 202. Section of an ovary, showing enlarged Graafian follicles with sero-sanguineous contents. (Half the actual size.)

changes, resulting in formation of pus, false membranes, etc.

In many cases ovarian cysts are evidently nothing more than enlarged and hypertrophied and dropsical Graafian follicles, such as represented in Fig. 202.

Rokitansky and some subsequent observers have even succeeded in finding ova in some of the cysts in question, thus affording a demonstrative proof of their nature. The follicle does not for some reason or other burst, or if bursting occurs, its lining takes on certain morbid changes sub-

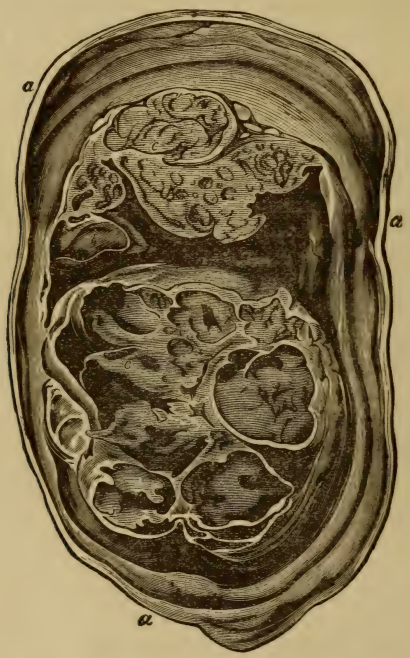
FIG. 203.



sequently, the result being continued growth of the cyst, and filling of its cavity with fluid. Simple ovarian cysts and multiple cysts originate in this way according as one or more follicles take on morbid action. We can imagine this hypertrophy affecting the Graafian follicles at any period of their growth, with proportionate differences in the results. The Graafian theory of the origin of ovarian cystic disease being admitted, it is easy to see how all sorts and varieties may present themselver in the relations of cysts. A cyst grows, and in its growth carries over it, or within it, portions of the ovarian stroma, in which lie the elements of future Graafian follicles. These undergo the pathological cystic transformation, and hence we get cysts developed one within the other almost *ad infinitum*.

The variations in the growth of the cysts occasion also great differences in the aspect and relations of the tumor at different periods. Thus, a "simple" cyst may preserve its integrity for many years, the remainder of the ovary not partaking, or partaking reluctantly, so to speak, in the cystic transformation; or the primary cysts may be rapidly

FIG. 204.



encroached upon, and filled up with secondary growths of cysts. And what may happen in reference to the first and second growths may take place also between the secondary and tertiary cysts.

The principal *varieties of arrangement* are as follows:

A. One large cyst (simple).

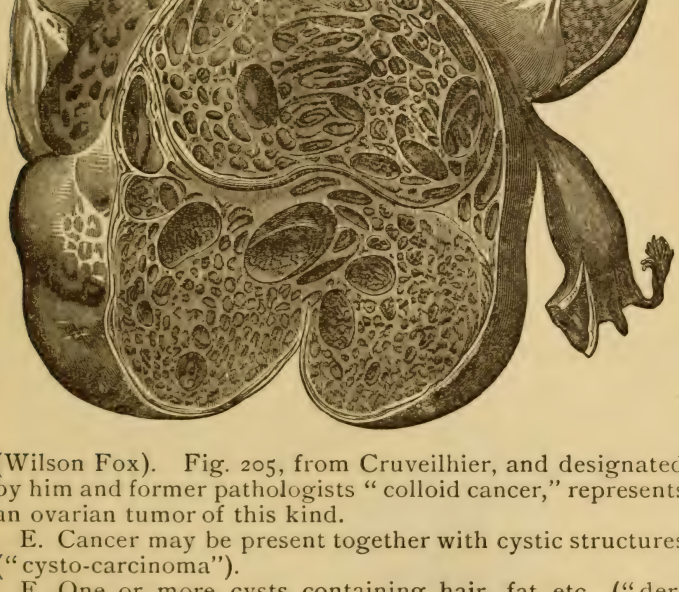
B. One large cyst in the interior of which are found several smaller ones ("secondary"), and within these again others still smaller ("tertiary"); these are also termed

"compound" cystic tumors, "proliferous" (see Figs. 203, 204, from drawings by Dr. A. Farre).

C. Three or four large cysts ("multiple," Farre), quite or nearly contemporary in growth, and which may contain secondary cysts.

D. A cystic tumor composed of one or more large cysts, and together with these a solid substance, itself containing cysts—"composite ovarian tumors," "cysto-sarcoma," or "alveolar adenoid tumor" (Spencer Wells); "glandular"

FIG. 205.*



(Wilson Fox). Fig. 205, from Cruveilhier, and designated by him and former pathologists "colloid cancer," represents an ovarian tumor of this kind.

E. Cancer may be present together with cystic structures ("cysto-carcinoma").

F. One or more cysts containing hair, fat, etc., ("dermoid").

In "ovarian dropsy" we have one or more large cysts containing fluid.

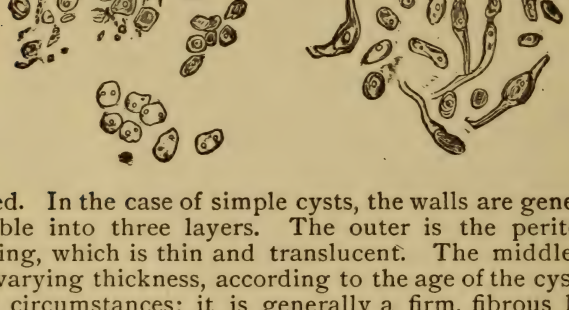
The *shape* of ovarian cysts is ordinarily rounded where

* Fig. 205, from Cruveilhier and Farre, is a good representation of the alveolar or glandular tumor; formerly termed colloid cancer.

they are single. Where also the tumor contains two or more large cysts, the outline of the whole tumor is rounded. When so large as to occupy the greater part of the abdomen, the shape of the cyst or cysts is determined necessarily by that of the abdominal walls.

The *consistence and thickness of the walls of the cysts* are various. The wall is sometimes very thin, especially in the case of single cysts, or where the tumor is mainly made up of one large cyst: the free surface of most cysts is thin. But the cyst walls have often very considerable thickness, and they are liable to be thickened by deposit from within, this deposit being the result of inflammation or coagulation of effused blood, or deposition of fatty matter in the shape of cholesterine, or from growths to be presently described. In the case of simple cysts, the walls are generally divisible into three layers. The outer is the peritoneal covering, which is thin and translucent. The middle coat is of varying thickness, according to the age of the cyst and other circumstances; it is generally a firm, fibrous layer, giving strength and consistence to the cyst. The middle coat contains the blood-vessels of the cyst, which are often very numerous, and may be as large as a small quill. Fatal hæmorrhage may occur in the operation of paracentesis, from wounding these vessels. The internal coat is a layer of cells, generally spheroidal, sometimes columnar (see Fig. 206); the epithelium may be a single layer, but is very often in several layers. The character of the

FIG. 206.*



* Fig. 206 represents epithelial cells from the interior of an ordinary ovarian cyst: A from a very small cyst; * the same, after addition of acetic acid; B from the surface of a contained cyst.

internal lining varies in different places, and according as other changes—inflammatory, etc.—have affected it.

The *contents of ovarian cysts* are open to great variation. Some, containing hair, fat, teeth, etc., form a class by themselves, presently to be described (dermoid cysts). The contents of the more ordinary cysts are mostly fluid, but very frequently they have a consistence more nearly that of treacle, and we may have all gradations between a limpid fluid and a thick mucus-like mass. The color varies excessively. In the majority of cases, the large cysts contain a fluid simply serous in character, light-yellowish and transparent; where there are many cysts, it is not uncommon to find the contents of no two cysts precisely alike. Blood is, not very uncommonly, effused into the cavity of ovarian cysts, and the transformations through which the blood passes give rise to peculiar appearances, the contents then assuming various dark shades of color. There may be flakes of fibrinous matter together with fluid, or the contents of the cyst may be distinctly puriform. In some cases there is an admixture of fatty degenerated structures. The consistence of the contents is peculiar. In almost all cases there is remarkable viscidity, and the contents of ovarian cysts are sometimes so extremely tenacious that the whole mass when pulled out holds almost inseparably together. The chemical constitution of the fluids of ovarian cysts is as follows:

Solid matters.....	58	per 1,000	(average of	31	analyses)
Pure albumen.....	43	" 1,000	" "	26	"
Salts	7	" 1,000	" "	15	"

Fatty matters and fibrin in small quantities.

The foregoing figures embody the results of analyses made by Becquerel of the contents of ovarian cysts taken from ten individuals. The average only is stated above, but there was a very wide range in the proportions of the different constituents in different cases. Thus the figures representing the highest and lowest proportion of solid matters were 101 and 21; the highest and lowest for albumen 90 and 17; for salts 10 and 1½. These results are calculated from a table which will be found in Mr. Clay's translation of Kiwisch, and which was supplied to Mr. Clay by Becquerel.

In an elaborate paper by Dr. Wilson Fox* will be found

* "Med.-Chir. Trans.," vol. xlvii., p. 272.

an account of the qualitative analyses of the contents of ovarian cysts. "The results tend to show," Dr. Fox believes, "that in these fluids there is a considerable difference between the contents of the different cysts. In all, the reactions obtained are more akin to those modifications of albumen discovered by Professor Scherer, and termed by him metalbumin and paralbumin, than to any of the hitherto isolated members of the series." The reaction was always alkaline, there was no precipitation with acetic acid, a point distinguishing these fluids from mucus. Waldeyer, Koeberlé, and Thornton consider that ovarian fluid is usually characterized and distinguished by its containing paralbumin, which substance is thrown down by heating the fluid, and is dissolved by strong boiling acetic acid. Dr. Drysdale (Philadelphia) considers that ovarian fluid is characterized by the presence of what he terms "the ovarian granular cell." This cell is an albuminoid body containing little fatty particles which give it a granular appearance. This ovarian cell is changed little by acetic acid. Dr. Drysdale gives these statements as the results of very numerous observations.*

It appears that when ovarian tumors are simple or innocent, the "ovarian" cells of Drysdale only can be observed. But when the tumors are of a malignant character other cells are liable to be observed in the fluid. And the examination of the peritoneal fluid in cases of ovarian malignant tumor discloses presence of peculiar cells, which would indicate that the tumor is not simple. Mr. Thornton† and Dr. Foulis‡ separately made this observation. These "malignant" cells are large pear-shaped, round, or oval cells, containing a granular material, with one or several large nuclei, with nucleoli and transparent globules. Dr. Foulis considers that presence of masses of sprouting epithelium indicates malignant peritonitis, especially when they are found in large number in bloody ascitic fluid. It appears to be a more serious matter prognostically when these peculiar cells are contained in peritoneal fluid than when they are taken from the interior of a cyst. Dr. Emmet, comparing statements of various observers, comes to the conclusion that malignant ovarian tumors are more common in this country than in America.

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* "Trans. Amer. Gyn. Soc.," vol. i., p. 195.
† *Brit. Med. Journ.*, Sept. 7, 1878. ‡ Ibid., July 20, 1878.

An important fact here to be noted is, not only that the same cysts have not at all times like contents, but that the same cyst tapped at different periods may give issue to fluids of varying degrees of consistency.

DERMOID CYSTS OF THE OVARY, CONTAINING FAT, HAIR, TEETH, BONES, ETC.

These form a well-marked and distinct class, not in reference to their outward form, but to the nature of their

FIG. 207.*



contents. They are not very commonly met with. The term "dermoid" has been applied to them from the nature of their contents, which are epidermic in character. They vary in size from a millet-seed to that of several inches in diameter. Usually there is found in the cysts a lining composed of a substance like the cutis vera, in which may be

* Fig. 207, from Cruveilhier, exhibits a dermoid cyst with its contents, consisting of hair, hair follicles, adipose tissue, etc.

traced structures identical with those of the true skin, viz., papillæ, sebaceous follicles, and hair bulbs, together with sweat-glands. Masses of fat intermixed with hair, the latter rolled up in balls, and teeth, with plates of bone—some or all of these form the contents of the cyst. But, together with these products, which have given the name "dermoid" to this variety of cysts, they frequently contain fluid, gelatinous material, and glandular growths such as are met with in other kinds of ovarian cysts. When the cyst has been the seat of inflammatory changes, pus may also be found within it.

They are found at all ages, in the child, in the woman, and after the period of sexual vigor is passed. Compared with other ovarian cysts they are rare; they seem to have been observed prior to puberty more frequently in proportion than other ovarian cystic tumors.

The precise nature of these curious growths has been a matter of controversy. It appears certain that they originate in the Graafian follicles. The presence of hair, teeth, and bones, was naturally suggestive of the idea that the cyst was a product of generation, until it was known that they are formed quite independently of sexual intercourse. In an elaborate paper on the subject* Dr. Julius Pauly says: "The most generally accepted theory attributes their development to a process of separation by strangulation occurring during embryological growth, such as Remak assumes for the cholesteatoma and Thiersch for the dermoid cysts — like formation of subcutaneous dermoid cysts by simple invagination of the skin and strangulation of the sacs of epidermis from which are formed the future hair follicles, with the difference that in the deeply-seated ovarian dermoids the closure of the abdomen has to be considered."

This theory involves the *congenital* origin of dermoid cysts of the ovary. The germs of the tumor exist from birth, but puberty or marriage produces, in many cases at least, the *development* of the tumors. The *ages* in 103 cases were as follows:

1–5	5–10	10–15	15–20	20–25	25–30	30–35	35–40	40–45	45–50	50–55	55–60	60–65	65–70	over 70
4	3	10	8	12	14	10	11	8	10	5	3	1	2	2

From a *few* recorded cases it seems likely that these der-

* Trans. in *Amer. Journ. of Obst.*, vol. viii., p. 404.

moid cysts are not seldom associated with a more or less undeveloped condition of the sexual organs.

Waldeyer's theory is as follows: "The epithelial cells of the ovary are capable in the way of ordinary proliferation of furnishing differently formed products than are usually found during the division of cells, when the descendant cells always bear the same character as the parent cells. This power, peculiar to the epithelium of the ovary, is made comprehensible by the fact that all ovarian epithelium must be considered as undeveloped germinal cells, or undeveloped ova. If a proliferation of the deep-seated ovarian epithelium takes place in the ordinary manner, in most cases a myxocystoma (colloid cyst) will be the result; whereas, if the proliferation referred to is attended with a deviation of the products of development a dermoid cyst will be formed."

Dr. Barnes states that dermoid cysts are usually roused into active mischief under the influences of pregnancy and labor after remaining dormant and unrecognized perhaps for years previously. He relates four cases; in two of these the cysts were not discovered till after labor, when both suppurated.

Dr. Mundé * relates a similar case. The suppurating cyst was observed seventeen months after a confinement—*hair* passed with the discharge. There was a hard tumor behind uterus opening into vagina.

The accurate account of the anatomy of these cysts, put forward by Steinlin,† showing the presence of a skin-like structure in the cyst, explained why the cyst was found to contain skin secretions, viz., hair, sebaceous matter, and teeth. The late Dr. Ritchie‡ expressed his belief that every dermoid cyst of the ovary is really an ovum which has undergone a certain amount of development; that it is a perverted attempt at parthenogenesis.

Dermoid cysts of the ovary run generally a slow course. They may inflame, suppurate, and ulcerate, and death may be the result of such alterations. In some cases the cysts have ruptured into the peritoneum, in some they have ulcerated into the bladder, with the result that the patient evacuates hair, etc., with the urine.

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* *Amer. Journ. of Obst.*, vol. xi., p. 578.
† "Zeitsch. f. nat. Med.," Band ix.
‡ "Ovarian Physiology and Pathology." London, 1865, p. 175.

COMPOUND OR COMPOSITE OVARIAN TUMORS.

The *partly solid, partly cystic* structures found in many ovarian tumors, and for which the appropriate designation is "compound" or "composite," will next engage our attention.

Of late years the occurrence of a substance containing and surrounded by cysts, and having itself a great resemblance to mammary glandular tissue, has attracted attention. It was termed by former writers "cystic sarcoma." Mr. Spencer Wells * proposed to designate it "adenoid tumor," or "adenoma" of the ovary. He described it as "identical in structure with the adenoid growths first described in connection with the mammary gland," and consisting of "delicate fibrous stroma, forming round or oval alveoli, the latter lined by densely-grouped epithelial cells forming a zone enclosing an area loosely packed with cellular elements of a similar form."

Another variety of the partly solid and partly cystic tumors of the ovary is that hitherto known as "alveolar" or "pseudo-colloid" disease of the ovary. It was for some time considered to be carcinoma of the colloid variety, but this idea is now entirely abandoned. The surface of the section of such a tumor resembles, as Dr. Farre,† who has well described it, remarks, "a fine sponge, the alveolar spaces being condensed and somewhat flattened, in consequence of the profusion with which the alveoli have been developed" (see Fig. 205). "These cysts are filled with a viscid mucus-like material, resembling half-liquid jelly." The mass on section sometimes resembles a honeycomb. Respecting the nature of these adenomatous and alveolar growths more will be said presently.

Cystoid cancer constitutes another composite tumor. Here the more ordinary cysts are present, together with medullary cancer, the cancerous growths pervading the stroma of the ovary, and pervading, as is the manner of cancerous growths in other parts of the body, in succession, the adjacent structures. As is the case in the two preceding groups, the proportion of solid matter to cystic growth varies in different cases and at different periods in the same case. In cases of cystoid cancer the tumor—semi-solid, or

* Report of Pathological Society in *Med. Times and Gaz.*, Oct., 1862. See also "On Diseases of the Ovaries," vol. i., p. 122.

† *Loc. cit.*, p. 592.

nearly solid to the feel at one part, more or less fluid at another, presenting often rounded eminences on its surface —may grow with great rapidity, and the whole tumor may be of considerable size. The cysts are liable to contract close adhesions of a more vascular nature than usual to surrounding parts. In a case operated on by myself these adhesions when broken bled most profusely.

The nature of *adenomatous* or *glandular* and alveolar structures, and their relations to cystic and cystoid growths of the ovary, have undergone a most careful and complete investigation at the hands of Professor Wilson Fox, the results of whose researches are contained in a paper in the "Medico-Chirurgical Transactions"* for the year 1864, and whose conclusions, demonstrative in themselves, have been verified by subsequent observers.†

It appears necessary (following Dr. Fox) to go back to the primary developments of the ovary, and of its contents, in order to arrive at an explanation of the structure of these cystic growths. Pflüger's‡ observations on the development of the ovary in the calf and the kitten show that the Graafian follicles begin in these animals as *tubes*, these tubes becoming constricted at various points, in order to form the separate follicles. Dr. Wilson Fox has found the human ovary in early embryonic life to contain tubules, or quasi-tubular structures intimately concerned in the production of the Graafian follicle. Now, Dr. Fox has made out that in many cystic growths of the ovary there is met with a structure of tubular character, wherein occur changes analogous to those observed by Pflüger in the development of the Graafian follicles of some other animals, viz., formation of tubes, or glands, and constriction of these tubes at certain points, one result of which is formation of cavities or cysts within this glandular tissue. It appears that Billroth, from observations in the thyroid gland, had come to the induction—"brilliant," as Dr. Fox terms it—that similar tubular structures would be found in ovarian cystic tumors. Dr. Fox has furnished the experimental proof that this is the case. It is his belief that "these tumors of the ovary (containing glandular structures) should be classed with those which originate in other glandular organs, by an ab-

* "On the Origin, Structure, and Mode of Development of the Cystic Tumors of the Ovary," vol. xlvii., p. 227.

† Dr. Braxton Hicks, Mr. Hulke.

‡ "Ueber die Eierstöcke der Säugethiere und des Menschen," 1863.

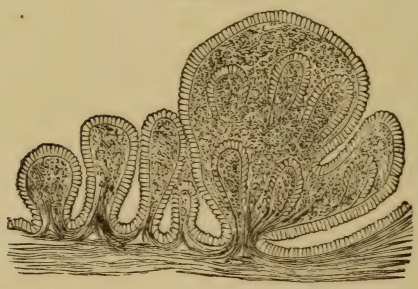
normal repetition of the processes of development observed in the fœtal condition, recurring with aberration in the adult." *

Dr. Fox's results are based on an examination of fifteen cases of ovarian tumor, in nine of which he was able to trace the formation of secondary cysts from tubular or glandular structure within cavities which appeared to have been Graafian follicles.

A brief abstract of Dr. Fox's account is here given:

The *lining* of the parent cysts presents usually a spheroidal epithelium in one or several layers. The growths which proceed from the internal walls Dr. Fox describes as "papillary," "villous," or "glandular," these terms indicating the physical characters of the growths.

FIG. 208.



The papillary growths, as represented by Dr. Fox (see Fig. 208), are composed of processes of delicate hyaline stroma, covered with epithelium, spheroidal or columnar, and tending to form large composite masses from repetition of the same process of growth from the sides of those already formed. The surface of the growths is finely villous, they are very vascular, and may attain considerable size. They are solid, but adjacent ones often grow together, and hence are formed between them narrow crypt-like spaces. Thus originate "secondary" cysts, and *in the secondary cysts* further growths occur. Concurrently, also, the original cyst necessarily increases in size, and secretions form in the interior. Dr. Fox considers that the formation of secondary cysts, as *thus* described, does not occur to a great extent.

* "Med.-Chir. Trans.," vol. xlvii., p. 275.

The "*Villous and Glandular*" *Growths.*—Fine "villous" processes are the first stage in the formation of the "glandular" growths. The villi contain very little stroma, thus differing from the papillary growths just described; they are little more than a loop of vessels supported by a little connective tissue, and are covered by several layers of epithelium of columnar form. When closely clustered, they lead to formation of glandular structures. The elevation and

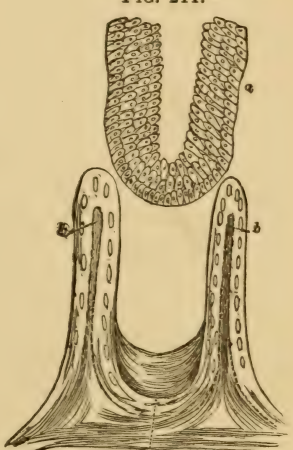
FIG. 209.



FIG. 210.



FIG. 211.*



lengthening of the villi result in the formation of corresponding depressions between them, the stroma growing upward and surrounding these pits or hollows, the result being a series of tubular spaces. The first stage is represented in Fig. 209 (from Fox), and the latter one in Fig. 210. The glands thus formed are from $\frac{1}{100}$ to $\frac{1}{400}$ of an

* Fig. 211 (from Fox) shows epithelium separated from papillæ.

inch in diameter; they are lined by several layers of epithelium. Further growths of villi may occur in the base of each tube. *Cysts* are formed in the resulting glandular tissue thus: The orifice may be occluded by growing of the opposite walls together, as shown in Fig. 210, or by septa growing across the tube, or by the stroma actually growing over and surrounding a cyst already formed within the parent cyst, one result of which is formation of a compound growth, and the glands and glandular masses may be found protruding through or still embedded within the stroma. The process of cyst formation in these glandular structures may be repeated *ad infinitum.*

A gland shut off and divided by septa becomes thus changed into a cavity with highly marked alveolar structures. Some of the alveolar spaces in the ovary originate in a kind of failure in the development as here described, but generally these alveolar spaces contain the same lining as that of the glands from which they spring, and the same tendency to further and fresh formations of glands. Dr. Fox's anatomical description accords with Rokitansky's, Virchow's, and Förster's, but his view as to the origin of these alveolar structures is new and different.

When the stroma grows in excess, we get a dense tissue permeated with alveoli—the condition described by Mr. Spencer Wells as "adenoma."

From the formations described by Dr. Fox, the secondary cysts and all the consequent varieties of structures in these diseases, originated in nine out of the fifteen ovarian tumors examined.

Another mode of cyst development with Graafian follicles was observed in a few instances, viz., a growth of glands superimposed one on the other by a process equivalent to budding. This process was found occurring simultaneously with the other mode just alluded to. Alveoli may arise from the close packing of a number of these thin-walled cysts.

Dr. Fox's conclusions imply the origin of these varieties of ovarian disease in the interior of Graafian follicles—well or imperfectly developed—and he would account for the origin of the dermoid cysts in the same way, although he has not actually had an opportunity of examining these latter structures.

Dr. Ritchie * endeavored to prove that the ovum itself

* *Op. cit.*, p. 197.

becomes developed in an irregular way, and gives rise to some of the forms of ovarian disease. Dr. Fox does not participate in these views.

Diseased processes are liable to occur in these compound or composite tumors. The external or parent cyst may give way on the surface, the contents escaping, and the growth within protruding again, the septa within undergo fatty degeneration. Bleeding may occur within the cysts, and inflammation, formation of pus, etc.

SOLID TUMORS OF THE OVARY.

Following the classification of Kiwisch, these tumors may be arranged as follows: 1. Hypertrophy; 2. Adipose (dermoid) cysts; 3. Apoplexies of the ovary; 4. Fibrous tumors; 5. Enchondroma; 6. Cancer. To these may be added, 7. Tubercle.

The tumor constituted by simple hypertrophy of the ovary never attains any considerable size, probably not above that of a pigeon's egg. There is a remarkable case, however, recorded by Dr. Bright, in which both ovaries were found after death enlarged pretty equally, and each constituted a firm fleshy tumor nearly six inches in the longest diameter, and having the shape of a kidney. They were taken from a patient who had borne children and who had passed the menstrual period of life. She had experienced pain referable to the uterus, a hard substance had been perceptible over the pubic region, and there had been considerable difficulty in micturition. She died, greatly emaciated, and having had jaundice and ascites. The tumors were not malignant in character.*

The *dermoid cysts* have been already considered (p. 347).

The *apoplexies of the ovary* are constituted by inordinate effusion of blood and coagulation of the same, in Graafian follicles, or by hæmorrhage into pathological structures of various kinds, such as cysts, or in the interstices of growths of cancerous or colloid matters. In the former case the tumors produced by the hæmorrhagic effusion are very limited in extent; in the latter they may be very considerable.

Fibrous tumors are met with in the ovary, in many respects resembling those found growing so frequently in the walls

* "Clinical Memoirs on Abdominal Tumors" (New Syd. Soc.'s edition), p. 146.

of the uterus; but a distinct independent pedunculated fibroid tumor of the ovary is a very rare pathological product, many cases recorded as such having really a true uterine origin. The fibrous growths met with in combination with cystic disease of the ovary belong to a different category, and are not so uncommon. The solid independent fibroid tumors of the ovary have been found sometimes to undergo osseous transformation, and the same may probably hold good with reference to other fibrous tumors.

Enchondroma of the ovary is very rarely observed.

Cancer of the ovaries constitutes one of the most important varieties of solid tumor. It occurs in two forms, scirrhous and medullary, the latter being the more common. Cancer occurring primarily is more frequently than not associated, as has been already stated, with cystic disease of the organ, or it may be found affecting the cystic growths secondarily. The hard form of cancer of the ovary does not attain a large size; it does not exceed the size of a child's head, and is usually very much smaller. Cancer of the ovaries may be found in association with cancer of the adjoining parts —that is, it may spread into the ovaries from the uterus or other organs, and may involve, more or less, the whole contents of the pelvis; and it may, when so found, originate in the ovary or in the adjacent organs. True cancerous disease of the ovary of large size is rare, unaccompanied by similar disease in adjacent parts; and it is also rare to find carcinomatous diseases of the ovary uncomplicated with cystic disease of the same organ. Ascites is very frequently associated with, and is an effect of, cancerous disease of the ovaries. Dr. Washington L. Atlee describes four interesting cases of sarcoma of the ovary.*

Case I.—Æt. 30; uterine hæmorrhage, convulsions, miscarriages, dropsical, anasarcous; on examination, abdomen size 6–7 months' pregnancy. Two tumors, one each side, both oblong, kidney-shaped, hard, nodulated, like a cirrhosed liver, movable; uterus central, normal. Diagnosis, malignant disease of both ovaries. Result not known.

Case II.—Æt. 32; three children; two months noticed a tumor, found to be ascites. Tapped. When seen two days later size of pregnancy at term. Diagnosis, a compact, small-celled multilocular tumor of right side, with peritoneal fluid. Tumor removed; incision 6–7 inches; shape

* "Gyn. Trans.," vol. ii.

enlarged kidney; 3 lbs., nearly 12 inches long by 6; hard, nodulated, mostly solid, some cysts in it. Microscope showed fibrous stroma, variously shaped cells, containing oil globules and granular matter cells; round, oblong, or oval, contained many nuclei. It seemed to be fibro-carcinoma, according to Rokitansky's description. Rarest form of cancer of ovary. Patient died in thirteen days.

Case III.—Æt. 30; two children; disease began about four months. Tumor irregularly ovoid to above umbilicus; hard, nodulated, like hob-nailed liver; no dropsy. Did not recommend operation. Dr. Thomas afterward operated: removed both ovaries (and injected milk); saved life, but three months afterward patient died from carcinomatous tumors of abdomen.

Case IV.—Æt. 30; three children, last eighteen months; two months before seen noticed lump in right inguinal region; rapid increase; hard, nodulated tumor felt; abdomen size of full gestation. Two months later fluid in peritoneum. Tapped; 26 pints. Two tumors felt below, very hard, nodulated. Ovariotomy. Diagnosis before, malignant disease of ovaries. Both ovaries removed, pedicles tied and dropped. Microscopic examination of juice showed a moderate number of round, oval, and spindle-shaped cells with large oval, regularly formed nuclei, and generally with bright nucleoli, closely corresponding with appearance of spindle-celled sarcoma. The committee consider the tumors of this character.

Tubercular disease of the ovary has been occasionally met with in conjunction with cystic ovarian disease, not forming a definite tumor, but occurring in the form of granulations scattered over the peritoneal aspect of the cysts.

THE NATURAL HISTORY OF OVARIAN TUMORS AND OVARIAN DROPSY—THE DATA FOR PROGNOSIS AND TREATMENT.

Here we shall devote a short space to some remarks concerning the natural history of ovarian tumors and ovarian dropsy, including their mode of growth, and duration, also the danger to life, and the mode in which life is destroyed by them.

The rare *fibrous tumor of the ovary* is generally of slow growth, but some tumors (reputedly) of this nature grow now and then rapidly. When of great size such a tumor may give rise mechanically to a fatal result, by impeding in

some way the due exercise of the functions of neighboring organs, or by giving rise to enormous ascitic distension. The latter secondary effect may threaten the patient's life.

The affections of the ovary to which most interest attaches are those of a *cystic* nature, and in which the disease is constituted by the presence in the ovary of cysts, or of cysts associated with solid matters of various kinds.

The *cysts* of the broad ligament grow slowly, but may after some years acquire great size. The *dermoid or fat cysts* present peculiarities, rendering a separate consideration of them necessary. Their course is usually slow; they may exist for some years without increasing remarkably in size, but they appear liable at any moment to undergo changes of a character fatal to the patient, viz., inflammation, formation of pus, perforation and rupture. The contents of these cysts—viz., fat, hair, teeth, or other matters—become evacuated into the intestines, into the peritoneum, or into the bladder, and the patient may perish from the effects of the mischief thus set up. The result of injecting iodine into the interior of a cyst of this kind, in a patient under the care of Dr. Alex. R. Simpson, does not offer encouragement to the pursuance of a similar treatment in future.

The other varieties of cystic affection of the ovary (for an enumeration of which see p. 338) require a longer notice. The variations in respect to the number of cysts affected with disease in a particular case are great: their contents also vary. In another circumstance also there is very great variability, viz., in respect to the progress made by what appears to be the same disease under different circumstances. And it is this great variability which infuses to so great an extent the element of uncertainty into our speculations as to the future of particular cases.

In cases where there is *one large simple cyst* of the ovary, with contents fluid or semi-fluid, the course of the case will probably be as follows: The cyst itself goes on increasing in size until it occupies the greater part of the abdomen, pushing the viscera of the abdomen upward and backward; the rate of increase may be fast or slow. It may remain in the pelvis, or it may leave this cavity altogether. The further history of this cyst will vary according as more cysts become developed below, or within, or upon it, or according as it remains single or the reverse. If no further development of cysts take place, this primary large cyst may go on slowly increasing in size, or, having arrived at a

certain state of fulness, may remain quiescent, and the patient may live several years, suffering chiefly from the mechanical inconvenience and distress produced by the great enlargement of the abdomen. The walls of the cyst may become accidentally ruptured, and the contents effused into the abdomen, or into some of the adjacent viscera; and under these circumstances the patient may be killed thereby; and, such rupture having taken place, the cyst may go on secreting anew, or no such further secretion may take place, and a cure may be witnessed. The distress and distension may, at a comparatively early period of the history of the case, be so great as to call for surgical relief—*e.g.*, tapping—and if tapping be performed, the cyst may refill again and again with great rapidity, the patient soon sinking from the effects of so great and continuous a loss. In some rare cases the disease has disappeared after one tapping.

The aspect of the case will also vary according to the relations of the tumor. Thus, if the cyst become fixed by adhesions in the pelvis at an early period, the mechanical difficulties thereby produced will be greater than where no such adhesions exist. And this circumstance has an important relation to the prognosis of the case, for the existence of the patient may, under such circumstances, be prematurely cut short by the disturbance of the renal secretion due to pressure on the ureter; such pressure giving rise to distension of the ureter and of the pelvis of the kidney. The functional disturbances of the other abdominal viscera are pretty much the same in cases of large cyst, whether the cyst extend into the pelvis or not.

The foregoing summary includes the principal features of one class of cases as they occur in practice, and it will at once be remarked how very variable is the course observed. It is impossible to ascertain positively what the future course of a particular case will be, although the previous history frequently affords valuable hints on the matter. There is one circumstance in connection with these cases which appears to have received less attention than might have been expected, viz., the possible influence exercised by a large cyst already in existence in preventing the development of fresh cysts. Some apparent anomalies in connection with the results of the operation of tapping in cases of this kind are in part explainable by admitting that an influence of this kind may be exercised. The operation of tapping has in many cases appeared to accelerate the fatal

result; it is certain that the disease has advanced much more rapidly after its performance in a considerable number of instances. In a certain proportion of these cases the fatal event is connected with the rapidity with which the cyst refills after being emptied, but in not a few it would appear that other cysts start into activity which would probably have remained quiescent if the primary cyst could have been left undisturbed.

An element of an unfavorable kind in the prognosis of a case where there is only one large cyst of the ovary, is the rapidity with which that cyst fills or refills after being tapped; danger from this tendency to refill is one less in degree than another which is to be feared at some future time, viz., the starting into activity and growth of other cysts; and there can be no question that, short of a radical cure, the restriction of the disease to one large cyst is one of the best results to be looked for. A careful survey of recorded facts appears to warrant the conclusion that the tendency to cyst formation in the ovary is often temporary, apparently exhausting itself in the production of one large cyst. Thus, supposing that the tendency to new cyst formation has in a particular case been arrested, the patient is less likely to succumb to this disease. The patient may still die from the perpetual drain on her system, caused by repeated refilling and evacuation of this cyst, or in some one of the other ways pointed out. But at first, and indeed for a very considerable time, it is always difficult to say whether the arrest alluded to has occurred.

Compound Cystic Tumors.—Here the tendency to cyst formation is, it may be from the first, not limited as above, but there is a successive production of cysts within, or upon, or below, those first formed. The cysts may grow with excessive rapidity, and the whole abdomen may very quickly become filled. This may occur either primarily, so to speak, or, one or two large cysts only having for some time existed, the abdomen becomes suddenly and alarmingly invaded by a multitude of new growths. The prognosis of cases of the kind now mentioned is very unfavorable. It is so bad, indeed, that Dr. Bright was accustomed to use the term "malignant" in describing such cases. The use of the word "malignant," so applied, is liable to lead to misconception, this term being now more generally limited to actual cancerous disease. In the cases now under consideration there is not, except in very rare cases, any cancerous

formation at all, the fatality depending on the mechanical interference of the ovarian tumor with the functions of life. When we find an ovarian tumor suddenly take on rapidity of growth, and are able to satisfy ourselves that this increase in size is not due to simple enlargement and distension of one or two previously existing cysts with fluid, the case is assuming a very threatening aspect. If the tumor become more irregular to the feel, if the fluctuation become indistinct while the tumor is evidently growing fast, these are facts confirmatory of the supposition that the tumor is the seat of rapid and extensive cyst formation.

Composite Tumors.—Another class of cases have now to be spoken of, in which there is formation of a considerable amount of solid matter, together with cystic disease of the ovary, there being simultaneously production of cysts and of the solid matter in question. Such cases often proceed with exceeding rapidity, and their prognosis is bad, the patient being generally killed with a rapidity commensurate with that of the increase in the size of the tumor. Cases are sometimes met with where, at a very advanced stage of the disease, no further increase in size appears to take place.

Lastly come those cases where the ovary, either previously the seat of cystic disease or not, becomes affected with *cancerous disease.* The prognosis in such cases is almost identical with that of cancer in other parts of the body. The disease termed "alveolar cancer," or pseudo-colloid disease, is not really cancer. In ordinary cancer of the ovaries, the prognosis is necessarily of a gloomy character, the disease spreading from or to the adjacent organs, and soon destroying the patient. But the diagnosis of these cases is very frequently only made during the operation of ovariotomy.

The *manner in which ovarian dropsy kills* varies in different cases. It is in many instances a slow production of death by exhaustion consequent on repeated drains from tapping. It is due often to intercurrent, slight affections, which would have produced little effect in a healthy individual. Thus, when the breathing is mechanically restricted, a slight inflammation of the lungs may rapidly prove fatal. In ordinary advanced cases of the disease, the mechanical disturbance of the functions of the great viscera—the heart, the liver, the kidneys (as by pressure on the ureters), the stomach, etc.,—gives rise to various alterations which directly

and indirectly impair the vitality of the individual. Restricted as to her food, restricted as to her capability of moving about, suffering from frequent nausea, sickness, prevented from sleeping, tormented by pains and inconveniences too numerous to mention, the sufferer from advanced ovarian disease presents a most lamentable spectacle. The condition of the patient is often the more painful, as it is quite evident that the other organs of the body are sound, and that, apart from the ovarian disease, there is nothing materially wrong.

The patient may be killed by rupture of the cyst, by inflammation of the same; in compound cysts, by inflammation and pyæmia consequent on softening and breaking down of the septa between the different cysts. Hæmorrhage into the cyst cavity is another accident which may occur. Each and any of these events may lead to a fatal result, but they may also, and do occasionally, bring about the cure of the disease. Rupture of the cyst is not very rare: the cyst may burst into the peritoneal cavity, or into any of the adjoining viscera, or it may perforate the abdominal wall. Such rupture is often the result of a blow, a fall, or an accident of some kind. When the fluid escapes into the peritoneal cavity, excessive diuresis generally occurs, and the size of the abdomen lessens. This rupture may kill the patient, as before remarked, but it has in a few recorded instances resulted in cure. In certain rare instances the pedicle of the tumor becomes twisted on itself, and the patient is killed by mortification of the tumor.*

The *Relation of Ovarian Tumors to Pregnancy.*—Difficulties may attend the process of gestation and parturition of a mechanical nature; ovarian tumors are, it appears, sometimes liable to undergo, during pregnancy or immediately after delivery, a softening or inflammatory process, attended with danger to the life of the patient. I was acquainted with the particulars of a case in which a woman had borne well and easily five children, having had a large cystic tumor of the ovary during the whole period; but I know of another case where the patient died, apparently from rupture of an ovarian cyst, shortly after the labor had occurred. Cases bearing on this point have been collected and commented on by Mr. Spencer Wells, Dr. Braxton Hicks, and

*See cases of this kind in "Year Book of New Syd. Soc.," 1869–70, related by Mr. Lawson Tait, Dr. Kidd, and Dr. Barnes.

others.* It appears that in many cases, however, the labor is not unfavorably influenced by an ovarian tumor; but unquestionably this immunity cannot be guaranteed. The remarkable results obtained by Mr. Spencer Wells and others, in operating on such tumors while the patient is actually pregnant, and without interfering with the progress of the pregnancy, necessarily affect any consideration of a prognostic nature applied to such cases.

CHAPTER XLVIII.

DISEASES OF THE OVARIES—(*continued*).

DIAGNOSIS OF OVARIAN TUMORS FROM UTERINE TUMORS.—Enumeration of the various Forms of such Tumors—Diagnosis as affected by the Condition of the Menstrual Function—Question of Pregnancy—Diagnosis as affected by other Particulars—History, Results of Examination, etc.—Use of Sound—Fluctuation Test—Diagnosis by Exploratory Incision.

DIAGNOSIS OF THE NATURE OF AN OVARIAN TUMOR.—Enumeration—Complications—Duration—Condition of the Surface—Tapping as a means of Diagnosis.

DIAGNOSIS OF OVARIAN TUMORS.

It must be confessed that the diagnosis and precise nature of an ovarian tumor is now and then beset with extreme difficulty. The majority of cases are readily recognized, but there are numerous exceptional ones.

In the Appendix will be found a description of the procedure to be adopted in making an examination of the abdomen in order to discover the nature of a supposed enlargement or tumor. It will be necessary to proceed with the examination as there directed in order to ascertain that a tumor is actually present. When it has been determined that there is an abdominal tumor, and further, that such tumor is *either ovarian or uterine*, we have, in the next place, to distinguish between these two.

The *uterine* series include—pregnancy, polypus, fibroid tumor; distension of uterus by fluid (menstrual or other

* "Obst. Trans.," vol. xi.

fluid accumulations); distension by gas; abscess of the uterus; carcinoma of the fundus of the uterus; and fibro-cystic tumor.

The *ovarian* series include—simple encysted ovarian dropsy; multiple and compound cysts; composite tumors, partly cystic and partly solid, including "alveolar degeneration," "glandular" tumors; cystic cancer; dermoid cysts; and solid tumors of the ovary—fibrous tumors, "adenoma," cancer, and simple enlargement; hydatid cysts; to these must be added, though not really ovarian, cysts of the broad ligament, also termed Wolffian cysts.

The Diagnosis between Uterine and Ovarian Tumors as affected by the Condition of the Menstrual Function.—If there has been no menstrual discharge for some time previous, we may suspect pregnancy, and the next thing to be done would be to ascertain whether the size of the tumor, its shape, etc., fall in with this view of the case. If the tumor had only lasted a few months—say six—and there had been no menstruation for six or eight months, this would constitute a sort of preliminary justification of the pregnancy theory. If the tumor had lasted six years, and menstruation had been absent for six months, this would be against pregnancy; but not absolutely so, inasmuch as there might be a tumor *plus* pregnancy. If the external examination by hand, stethoscope, etc., give no indication, or insufficient at least on which to form a conclusion, then a vaginal examination, an examination of the breasts, etc., would be required.

The investigation of the history of the case and the examination practiced giving, we will suppose, no evidence of pregnancy, the next step to be taken is to prove a negative, and to determine positively that the patient is *not* pregnant. This second question is more difficult, or may be more difficult, to deal with than the first, for very obvious reasons. Thus the case before us may be of this kind: the patient has not menstruated for four months, there is a tumor in the abdomen the size of the gravid uterus of six or eight months, there is no sound of a fœtal heart, the breasts are painful, perhaps swollen, the uterus is, from the vagina, felt to be enlarged, but there is no ballottement. In such a case the observer will, on the data mentioned, find it difficult to exclude pregnancy—to prove the negative. It may be that his ear is defective, his touch untutored; the case may still be one of pregnancy; it may be one in which—as is not so very rare—there is a slight menstrual-like dis-

charge for one or two months, or longer, pregnancy really dating from an earlier period; or it may be pregnancy with destruction of the embryo, and hydatidiform degeneration of the ovum, as in an instance recorded at page 874. The condition of the orifice of the uterus would, under such circumstances, help the observer either to prove the desired negative, or be sufficient to show him that the making of the diagnosis must be for a while postponed. The state of the lower segment of the uterus, also, would very greatly assist in the desired solution. Thus, in the case of an abdominal tumor as large as a seven or eight months' gravid uterus, it would be sufficient to prove the required negative, if we found that there was absolutely no evidence of the os uteri being continuous with a rounded tumor, perceptible to the touch equally behind, in front, and at the side of the same. When the suspected abdominal tumor is the size of the six months' gravid uterus, and upward, the vaginal digital examination is of the greatest service in enabling us to prove the negative, when the case is really not one of pregnancy.

The next class of cases to be considered is that in which *menstruation is present.* If the patient be menstruating regularly, and the fact be undoubted, it may be almost certainly concluded that the tumor is not due to either one of the following conditions, viz., pregnancy, distension of uterus by fluid or gaseous accumulation, abscess of the uterus.

In fibroid tumors of the uterus, in carcinoma of the fundus uteri, in the various forms of ovarian disease, whether cystic alone, or composite tumors, or solid tumor, menstruation may be still regular, or comparatively so, or it may be completely absent. Presence or absence of menstruation may be thus equally observed in certain uterine and in certain ovarian tumors.

The menstruation criterion failing, we have to fall back upon the data afforded by other particulars of the history of the case, and the results of examination, abdominal, vaginal, etc.

We may dispose of several of the minor and less frequent of the causes of abdominal, uterine, or ovarian tumor, now remaining on our list, in a very few words.

Carcinoma of the Fundus Uteri.—The symptoms attending this rare disease would be likely to resemble those attendant on polypus of the uterus—*i.e.*, copious bloody dis-

charges, leucorrhœa—but in some cases such have been wanting. The supra-pubic examination by the hand would substantiate little beyond the existence of a tumor of a rounded character, the size of which is limited.

We may get rid of the *simply solid tumors* of the ovary in one paragraph, with one or two reservations. It is very rare to find a *fibroid* ovarian tumor of any considerable size, but the diagnosis of a large tumor of this kind from a large tumor of similar physical characters growing from the uterus would be next to impossible. Thus, simple cancer of the ovary rarely produces a tumor of any magnitude, although certain *composite* tumors of the ovary, partly cancerous, may grow to an enormous size. Moreover, simple cancer of the ovary is rare, unless in cases where there is extensive carcinomatous affection of the adjacent or other parts, and consequently profound constitutional disturbance. *Enchondroma* of the ovary is a very rare disease, the existence of which even has been questioned, and it need not therefore detain us. With *simple hæmorrhagic effusions* we have no practical interest in this place. *Hypertrophy of the ovaries*, in the single case recorded by Dr. Bright, produced a tumor not larger than the kidney, and this was a most rare phenomenon. The *Wolffian cysts* of the ovary rarely exceed the size of an orange, but when larger the tumor could not be distinguished from an ordinary ovarian cyst. *Adenoma* of the ovary may constitute a hard tumor of considerable size. *Dermoid* cysts are rare, but in their physical characters, mode of growth, etc., do not present any very characteristic symptoms. They do not, unless in very rare cases, grow so large as the other more common cystic tumors of the ovary. The *hydatid* tumor of the ovary is very rare, and might be expected to be witnessed only in cases where the liver is affected, and in conjunction with symptoms of chronic or acute peritonitis. Practically, its diagnosis does not possess much interest for us in this place.

Without much difficulty, most of the conditions mentioned may be severally eliminated from consideration. And that being done, the diagnosis now rests between the following conditions:

Fibroid tumor of the uterus.

Polypus of the uterus.

Fibro-cystic tumor of the uterus.

Cystic disease of the ovaries, viz., simple, multiple, or compound cysts.

Composite tumor of the ovary.

Fibroid tumor of the ovary.

Sarcoma of the ovary.

Dermoid cyst.

And to these might be added the case of a large Wolffian cyst.

The conditions in question give rise to tumors which in many particulars resemble each other. The characters which they have in common are the following:

The tumor is, or may be, rounded in shape.

It may be slightly movable in the abdomen.

It may have a more or less chronic course.

It may be associated with serous effusion in the peritoneal sac.

The firmness and resistance of the tumor may be equal in each.

The size of the tumor does not, unless in the case of a very large one, offer any help in the discrimination.

It is true that generally we find marked differences in respect of some of the foregoing characteristics; but these differences are not always so considerable, and by relying too implicitly on distinctions of this kind mistakes are frequently made.

The diagnosis between the various pathological conditions just mentioned is to be made by careful external and internal examination, and by consideration of the previous history. We have now no scruples as to using the uterine sound, having excluded pregnancy from the consideration by previous analysis.

In many cases certain characters of the tumor, as felt through the abdominal parietes, are almost conclusive as to its ovarian origin; one of these is, *distinct fluctuation* from one border of the tumor to the other. Fluctuation of this kind might be observed in that rare disease, fibro-cystic tumor of the uterus. We presume that all cases of ordinary ascites, or of ascites *combined* with tumor, or of distended bladder, have been excluded. The *absence* of fluctuation does not, however, indicate that the tumor is not ovarian.

If we examine the uterus from the vagina, digitally and by means of the sound, and clearly ascertain that the os is natural, that the cavity of the uterus has its normal length,

the conclusion to which we may come is, that it is not a case of polypus of the uterus; but this is the extent of the knowledge afforded. Polypus of the uterus may be excluded in other ways from consideration. Thus, the previous history in cases of polypus is usually one of occasional hæmorrhages, profuse menstruation, leucorrhœa, etc. The diagnostic signs are as follows: There is a hard, smooth, well-defined, abdominal tumor of slow growth, the uterus evidently enlarged from the vagina, its cavity greatly lengthened, a hard tumor is perceptible within the uterus.

Uterine and ovarian tumors have the following characters in common: The pelvic cavity may be found distended by a tumor firm to the touch in both cases. The abdominal tumor may be firm to the touch in both cases. It may be of slow growth in both cases. It may be rounded, smooth, and have a tolerably uniform surface, in both cases. The disturbance of the functions of menstruation and defæcation may be equal. In the shape of the tumor we find no absolutely distinguishing sign.

Let us pursue the investigation further. Supposing that by examining *externally* through the abdominal walls we are able to detect fluctuation in places, or even supposing that we find that in certain parts the tumor is softer and not so resistant as at others, this would enable us to say the tumor is of ovarian origin. To this statement there is one single reservation—that if the rare fibro-cystic tumor of the uterus were present, the sign in question might prove deceptive. The absence of such partial fluctuations, or of such partial softness, does not, however, prove that it is uterine. Or, supposing we found the surface of the tumor very unequal, presenting hard, smooth, rounded, distinct elevations three or four or more in number, and varying in size from that of a walnut to that of an apple or larger—these elevations being evidently integral parts of a central mass, the consistence of which is identical with that of the elevations—this would prove it to be a case of fibrous tumor of the uterus. On the other hand, in the case of very large fibrous tumor, the surface is quite smooth and uniform, and irregularities and eminences of the surface are then quite wanting. Rarely, the hardness generally characteristic of fibrous tumor is wanting. In a few cases there is actual softness and apparent fluctuation. Such a condition would make the diagnosis very difficult. The *duration* of the tumor would in some degree assist, but we

are now and then misled by the patient's assertion that the tumor has existed only a short time, when the opposite is the actual fact. A large fibroid tumor sometimes exists for years unknown to the patient or to any one.

Before describing the internal examination, the *natural history of an ovarian or extra-uterine tumor, so far as relates to its growth and the effect of that growth on the position of the uterus*, may be considered.

A fibrous tumor growing on the peritoneal surface of the uterus, and reaching a large size, and an ovarian tumor, may affect the uterus in like manner. Thus the fibrous tumor may in its growth carry the side, or back, or front of the uterus—according as it may happen to be placed—along with it; the cavity of the uterus may be thus, in the case of a very large fibrous tumor, very considerably elongated; or, it may leave the cavity of the uterus unaffected, the body of the uterus undergoing not an expansion but an actual atrophy, and under such circumstances the small atrophied uterus is flattened and pressed downward into the pelvis, while the large fibrous growth mounts up into the abdomen. It is evident that the internal examination by the sound will reveal correspondingly different signs, according as one or other of the events mentioned happens. Take next the case of an ovarian tumor. Here the circumstances are precisely analogous. The ovarian tumor, in its growth up into the abdominal cavity, either draws the fundus uteri up with it, thus necessarily lengthening the uterine cavity, or it presses the whole uterus downward, the length of the uterine cavity being in nowise altered. Again, whereas it most commonly happens that the ovarian tumor presses the uterus forward, while engaged in elongating it, the reverse may be the case, the uterus being sometimes posterior, and the pelvic part of the ovarian tumor may push the uterine fundus to one side of the pelvis, elongating its cavity at the same time. Another effect which may be produced on the uterus during the growth of an ovarian tumor, is propulsion downward of the lower segment of the uterus concurrently with dragging upward of the superior segment. This may happen when the ovarian tumor fills the pelvis and grows there, at the same time that it grows also upward into the abdomen.

And now, with the above facts before us, the value of the signs derivable from digital examination *per vaginam*, and from the use of the sound, will be more intelligible.

If there be a large tumor in the abdomen and the sound pass into the uterus for a distance of three inches or upward, and the cavity of the uterus be found more anteriorly than it should be, this will probably indicate its ovarian nature, but not certainly, for it may be a case of large fibrous tumor growing behind the uterus. The history of the case will now probably throw light on the subject. Thus, if the abdominal tumor increase quickly, it is ovarian (the reservation being again made as to presence of the rare fibro-cystic tumor of the uterus); or if the abdominal tumor be distinctly fluctuating, it is ovarian. It will be well to recollect that the sound might pass in this direction and in this manner in a case of large polypus of the uterus.

In a case which came under my notice, the vagina was drawn upward and ended in a cone just behind the os pubis; the cervix was obliterated so far as its vaginal portion was concerned, and the sound entered for upward of three inches. There was a hard unyielding tumor felt behind the vagina, extending upward into the abdomen. My first impression about this case was that it was a large fibrous growth from the posterior part of the uterus; but having examined the abdomen, and finding there a tumor which was as large as the head of an adult, the diagnosis made was that the tumor was ovarian; and this diagnosis was justified by the rapidity with which the abdominal tumor subsequently increased in size. Again, another case may be mentioned to show particularly how the diagnosis is made, and on what data it rests. The patient, æt. 26, had been married four years, never pregnant, abdomen greatly enlarged, suffering severely from dyspnœa; she was very weak and ill. Catamenia absent for eight months, but there had been a slight show fourteen days before. Examining *per vaginam*, the uterus was found to be small, atrophied, flattened, and pushed a little downward; its long axis lay horizontally instead of nearly vertically; above it was a tumor. Examining through the abdominal walls, there was found to be marked fluctuation below a line extending from the splenic region to the right crista ilii, tumor well defined by percussion, but not by palpation. The diagnosis was ovarian dropsy. The vaginal examination showed absence or enlargement of uterus; the abdominal showed fluctuating, distinct tumor; the results of the two methods of examination indicated clearly the diag-

nosis. These two cases are not mentioned because they presented anything remarkable in the way of difficulty—rather the reverse. Fig. 212 gives a view of the abdominal tumor in another case of ovarian dropsy, where the tumor was of considerable size. The uterus was pushed downward and backward.

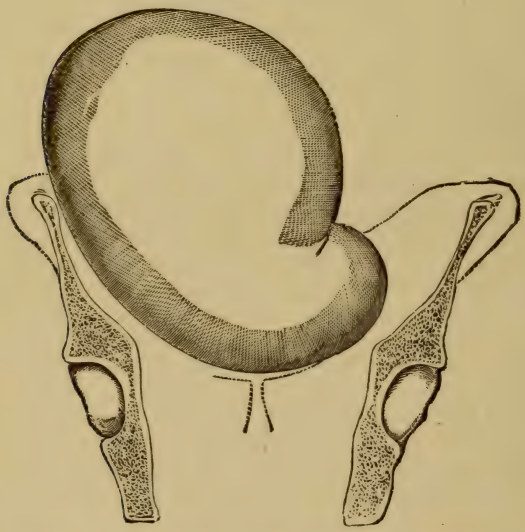
To appreciate more particularly the value of the indications given by the sound, we may divide our cases into two classes—those in which the uterine cavity is found decidedly elongated and those in which it is not. The cavity may be decidedly elongated, as above stated, from a fibrous growth of the uterus or from an ovarian tumor. In all cases it is not possible during life to diagnosticate between these two conditions, but generally the attendant circumstances enable us to do so pretty easily. In the second of the cases above related, the fluctuation of the abdominal tumor, its rate of growth, and absence of uterine enlargement, were conclusive; in the first of the cases, the rate of growth, too, was one of the points which were of importance. But we sometimes meet with cases where the uterus is lengthened, the tumor so close to the uterus as not to be separable from it; where the tumor grows slowly, and where, nevertheless, the case turns out to be ovarian. When the tumor grows rapidly, this is in favor of its ovarian nature, but the absence of this rapidity of growth does not prove the contrary. To mistake a uterine for an ovarian tumor is to commit an error of greater importance than a mistake of an opposite kind, for the reason that serious operations are undertaken when the tumor is supposed to be ovarian, which would not be contemplated if the tumor were considered uterine. The following are the most reliable distinctive signs in a case presenting difficulty:

For ovarian tumors, are, rapidity of growth, impediment of the circulation in the lower extremities, evidenced by œdema, varicose state of veins, severe constitutional disturbance—*e.g.*, great weakness and debility, emaciation, and pelvic continuous pain. These signs are in fact the signs usually present in cases of solid tumor of the ovary of cancerous nature, or in cases of cystic cancer, where the growth happens to be for a time stationary. Absence of such signs is, however, not so strongly evidence of a negative kind, for some chronic ovarian tumors give rise to very little mechanical or other disturbance. If, in a case of elongation of the uterine cavity, the sound passed quite into the

centre of a large tumor, this would almost, but not quite, conclusively indicate its character. If the sound passed laterally, or marginally as it might be termed, as regards the tumor, and the tumor were felt from the vagina to be fluctuating, this would favor the theory of its ovarian nature.

The cases in which there is no ascertainable elongation of the uterine cavity come next. Here the diagnosis between ovarian and uterine tumors is not usually attended

FIG. 212.



with so much difficulty. The tumor, if uterine, is most likely to be a large, slow-growing fibrous tumor, causing little inconvenience except from the great size to which it may attain. If the tumor were fluctuating, as ascertained by vaginal or abdominal examination, it could not in all probability, be uterine—the rare fibro-cystic tumor of the uterus being excluded from consideration; but if there were no fluctuation, considerable difficulty might be experienced in deciding whether the case was one of large fibrous or other solid tumor of the ovary, or a fibrous semi-pedunculated tumor of the uterus. There are, in fact, no signs enabling us positively to distinguish between them.

It must be recollected that sometimes the uterus becomes embedded in and surrounded by a mass of disease of ovarian origin. The composite tumors of the ovary occasionally grow in this manner. The signs afforded by the sound might, in such a case, lead to the supposition of uterine disease; the *general* symptoms would usually be of ovarian character.

There appear to be some cases in which the diagnosis is really impossible. The difficult cases are those in which a slow-growing, not large, tumor exists, which it is just as probable is ovarian as uterine. A pedunculated or even a sessile fibrous tumor of the uterus may occupy the same position, present the same physical signs, produce even the same symptoms, as a fibrous or solid tumor of the ovary. We may make a diagnosis which is an infinitely probable one, but which it is just possible *may* be wrong, viz., that the tumor is uterine because an ovarian tumor of this kind is so rare; and this is all we can do or may be able to do in such a case. If we encounter a tumor of this kind at an early period of its growth, and before there has been afforded an opportunity of knowing whether it be a slow-growing tumor or not, the diagnosis is still more difficult, for then the tumor may be a non-fluctuating specimen of ovarian cystic disease, or any one of the other varieties of ovarian disease, or it may be a uterine fibrous tumor. The nature of such cases can only be definitively diagnosticated by waiting, unless indeed we use a grooved needle and endeavor to obtain thus some notion of the nature of the contents of the tumor. When the necessity for a diagnosis of this kind arises, the tumor is generally a pelvic one, not having yet passed up into the abdomen.

Looking carefully over the records of cases where mistakes have been made in diagnosis—where ovariotomy, for instance, has been attempted, but the tumor found to be uterine—it will be seen that the element of "time" was not allowed to have its due weight in the decision arrived at prior to the commencement of the operation. Thus in one case the tumor found to be "uterine" had existed for four years; in another there was a cyst connected with the uterus of eight or nine years' duration; in another a "large fleshy tubercle of the uterus" of "many years'" duration; in another a solid vascular tumor connected with the uterus six years. It is probable that in these cases the tumor was solid, at all events non-fluctuating, and it is likely that simi-

lar mistakes may be avoided in future, when hard tumors simulating ovarian are in the abdomen, by attention to the diagnostic value of this element of time.

The diagnosis of *fibro-cystic tumor of the uterus* is one of great difficulty, because we have here the two things combined—a solid outgrowth from the uterus which itself contains cysts. The difficulty arises from the physical resemblance this bears to a case of cystic disease of the ovaries. To estimate aright the difficulties of the question and the best method of surmounting them, careful study of the cases actually published is essential. Some of these cases are given at length in the chapter on Fibroid Tumors of the Uterus. Mr. Spencer Wells mentions two circumstances of assistance in the distinction: one is, that the color of the cyst-wall in fibro-cystic uterine tumors, when laid bare by abdominal incision, is darker than that of ovarian cysts; another, that the cysts in the former case contain a thin serum with 5, 10, or 15 per cent of blood intimately mixed with it, and not separating until after standing some hours.*

Diagnosis by Exploratory Incision. — In some cases the operation of ovariotomy is undertaken with full recognition of the fact that it *may* be found that the tumor is uterine in origin and that it may prove in consequence non-removable. After the incision into the abdomen is made, the hand is carefully passed downward by the side of or behind the tumor, whereupon the information necessary is obtained. Adhesions are not generally present so as to prevent this exploration in cases of fibroid tumor of the uterus. These exploratory operations are not generally attended with much risk.

We have here spoken of the difficulty of the diagnosis between ovarian and uterine tumors. Between these two series and *cystic enlargement of the kidneys*, a very rare disease, the diagnosis is equally difficult, and generally only made by means of exploratory operation.

DIAGNOSIS OF THE NATURE OF AN OVARIAN TUMOR.

The diagnosis having been advanced so far that we are able to pronounce the tumor to be of ovarian character, it remains to determine more precisely the nature of the tumor.

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* "Diseases of the Ovaries," vol. i., p. 362.

It will be unnecessary to consider here the smaller and less important of the tumors originating in the ovaries; the remarks previously made enable us to dispense with this, and we shall now only consider the diagnosis of those which are practically important, and which may attain great magnitude, or at least produce considerable and marked enlargement of the abdomen.

The ovarian tumors now before us include:

Simple, multiple, and compound cysts.

Composite tumors, and cystic cancer.

Solid tumors.

In addition to the conditions in the foregoing list, a diagnosis of the nature of an ovarian tumor will not be complete which does not have regard to the complications liable to be observed. One of the most common of these is *ascites;* another, the existence of which is, however, more liable to be overlooked, *pregnancy.*

The diagnosis of the several ovarian tumors above mentioned, one from another, is sometimes easy, at other times extremely difficult, at other times again simply impossible, by any kind of examination we may devise, short of exploration by means of tapping, and in some cases we cannot even then obtain such a perfect knowledge as may be desirable. In the majority of cases, however, we can get as much information as is needed to enable us to decide as to the treatment. Attention is now directed simply to the determination of the *pathological* character of the tumor. There is another kind of diagnosis, a sort of mixture of diagnosis and prognosis, the consideration of which comes under the head of Treatment.

The Age of the Tumor.—If we find the tumor has been growing rapidly, and has only dated from, say, a year previously, we may pretty safely exclude from consideration the simply solid tumors of the ovary and dermoid cyst. If the tumor has been growing slowly, say three years or longer, and the subject of the case be young or, at all events, not a very old woman, this would lead us to consider the possibility of the case being one of dermoid cyst; if on examination, under such circumstances, a distinctly fluctuating tumor is ascertained to be present, this would militate against such a view of the matter; but if the tumor is found to be non-fluctuating, it may be either a case of dermoid cyst, or a case of composite tumor, or, possibly, of compound cyst of the ovary usually slow in growth. A slow-

growing, non-fluctuating, well-defined, smooth tumor, which on other grounds has been determined to be "ovarian," in a woman not old, is more likely, however, to prove to be a dermoid cyst than anything else. Judging from experience, the actual diagnosis of these dermoid cysts during life and before operation is not easy, and this is partly due to the fact that this condition is sometimes met with in association with the more ordinary form of cystic disease of the ovary. Respecting the fibrous tumor of the ovary, it is to be remarked that its diagnosis from other tumors of the ovary is not so difficult as its diagnosis from uterine pedunculated fibrous tumors. Its very slow growth, hardness, and well-defined outline are the principal characteristics. "Adenoma" of the ovary, which may give rise to a solid tumor of considerable size, would be distinguished by its comparative rapidity of growth.

When we have before us a case in which the abdomen has become markedly enlarged in the course of the previous year, this enlargement being due to the ovarian tumor alone and not partially to ascitic effusion superadded, we may nearly safely leave fibroid tumors and dermoid cysts out of consideration. The further diagnosis is guided by the size, consistence, resistance, smoothness or inequality, rapidity of growth of the tumor, by the symptoms to which it gives rise, and by the general condition of the patient's health.

We may take the chief of these criteria one by one, and ascertain what information is to be procured from them as to the nature of the tumor.

The *condition of the surface of the tumor* affords necessarily more information respecting its physical character than can be obtained in other ways. Supposing we find the tumor perfectly smooth and uniform, and offering equal resistance at all parts of its superficies, whether felt from the vagina or through the abdominal walls, such a tumor is likely to be made up of one large cyst. To confirm this view of the case, we might have the additional fact that the tumor presents fluctuation from one side to the other, and from above downward. We might not get fluctuation, and nevertheless the case may be still one of simple cyst, for fluctuation cannot always be made out when the cyst is very tight. Thus the fluctuation test might or might not be available. A smooth uniform tumor, not fluctuating in the manner alluded to, might prove to be one of compound cysts of the ovary, one large cyst being the common covering for a

large number of smaller cysts within it. The fact that the tumor is large, smooth, and uniform as regards its surface, even when fluctuation is absent, is presumptive evidence that the tumor is not a composite tumor of the ovary; it is more likely to belong to the other series, though on this point there is no rule. Sometimes we find that while, generally speaking, the tumor is smooth and rounded, the hand, slightly pressed inward, encounters one or more rounded bodies *within* the larger tumor. This is a condition of things only met with when there is one large cyst, not tightly filled with fluid, and having within it other cysts; and under such circumstances we get therefore more information as to the nature of the interior of the tumor. Care must be exercised not to confound with this condition one which rather closely resembles it, viz., the combination of ascites and ovarian tumor. Such a mistake could only be the result of great carelessness, but still it might be made. An event which is quite possible is that there may be a large cyst giving the fluctuation sign at all parts of the surface, and which therefore conveys an idea that the whole tumor is made up of this cyst, whereas it may prove afterward that within this cyst is a considerable mass made up of several smaller cysts. The circumstances are sometimes such, that until a portion of the fluid in the large containing cyst is evacuated by tapping, the true nature of the case cannot be made physically evident.

On the other hand, when we find the tumor *unequal* as regards its surface, we draw inferences which may be approximatively stated as follows: If the tumor present a large rounded eminence at one point, a second eminence of a like character at another, the depressions between forming divisions across which fluctuation is not transmitted, and we find the tumor to be made up of two or three such large eminences, the whole forming a tumor which possibly extends up to the umbilicus or some way beyond it, then we have probably to do with a case of multiple cyst of the ovary, or possibly there may be a tumor growing from both ovaries. Fluctuation at all parts of the surface, limited as above stated, would be evidence nearly conclusive that the case is not one of compound cysts, or one of composite tumor. Absence of such fluctuation might be due to great tightness of the cysts, or to great thickness of the walls of the cyst, to its jelly-like contents; or it might be that each of the large cysts contained other smaller ones.

To take another case: we find the tumor unequal as regards its surface, it presents a rounded eminence at one part, and fluctuation is here evident; while close to it is felt a portion of the surface harder and more resistant; at other situations the surface is perhaps still more irregular. Such a condition might be due to compound cysts, or to a composite tumor, either glandular (cystic sarcoma, alveolar degeneration) or cystic cancer of the ovary; or there might be tumor of both ovaries. Rounded nodular eminences on the surface of an otherwise smooth tumor may indicate either small cysts at the situations in question, or cancerous nodules; but we may draw one important inference from their existence, viz., that either the mass beneath these nodules is composed of solid matter of some kind or other, or that the whole tumor is a compound cystic one; the growth of small cysts *on* the surface of simple cystic tumor, or multiple cystic tumor of the ovary, is not common.

It is only in the case of rather small tumors—*e.g.*, tumors not exceeding the size of the head of an adult—that much difficulty is found in determining, approximatively at all events, the physical construction of the tumor. When the tumor is of large size, if it be a case of simple or multiple cysts, there is evident generally, at some period or other, fluctuation, and the surface is smooth and comparatively even. But in the case of a large composite tumor, or in the case of a large compound cystic tumor, there is at some situations a marked peculiarity as regards the surface, in respect to the consistence and degree of resistance of the kind above alluded to. The diagnosis of the nature of the smaller tumors requires a more particular examination. It has been already stated that a moderate-sized rounded tumor, in which fluctuation is not evident, may be either a simple cyst with very tight walls, having very dense contents, or a tumor of compound or composite nature. The tumor may be irregular on the surface or not; if irregular, this will help us in the way previously remarked, but if not, the diagnosis has to rest on other data. Under such circumstances, something is often to be made out from the general view of the case, apart from the physical characters of the tumor. Rapidity of growth, in the case of a non-fluctuating tumor, would incline us to believe it to be one of compound cysts or a composite tumor. Rapidity of growth, alone, means nothing, for we see repeatedly that large cysts, after being emptied by tapping, refill

in a very short space of time; but if we have before us a non-fluctuating tumor, the fact is of some importance in determining its construction.

Is there anything which can be learned from the *position* of the tumor, as to whether it be a purely cystic tumor, or a compound cystic tumor, or a composite tumor? Nothing absolutely. We may find a large semi-cystic tumor occupying the abdomen, and not at all engaged in the pelvis (the more common event); or we may find a part of such a tumor in the pelvis and a part in the abdomen. And if the tumor be made up of compound cysts, or if it be a composite tumor, we may find a portion of the same in the pelvis, or the whole may have passed upward into the abdomen.

We may now consider the diagnosis of that class of cases in which, having made out by previous examination that the condition present is either "compound cystic tumor" or composite tumor—it is considered desirable to pursue the analysis still further. Speaking of these cases generally, it is to be remarked that in each the growth of the tumor may be very rapid, but it is not necessarily so. In each of them there is cyst growth going on, which growth may proceed with different degrees of vigor at different parts of the tumor. The superficial part of the tumor may be therefore solid to the feel, or it may be chiefly cystic. The degree of resistance communicated to the touch is not the same in all cases, even when the tumor is identical; and during life no very precise differentiating indications can be drawn from data of this kind. The degree of hardness may not in a case of cystic cancer be very different from that in a case of compound cyst. We may often, however, learn something from the condition of the surface of the tumor. Thus hard knobs or excrescences on the surface is presumptive evidence for cystic cancer, if we find they are unlike small cysts in shape or other physical characters. Absence of such knobs is not conclusive of the non-cancerous nature of the tumor. Again, the association of ascites in these cases is of some importance. Ascites may be present in association with all kinds of ovarian tumors, but it is more frequently found when the ovarian tumor belongs to one of the series now under consideration; it is most common when the tumor is composed of cystic cancer. And hence, when the tumor presents knotty hard elevations, and there is ascites, a suspicion would arise that the tumor is of a cancerous nature.

The other points to which attention should be directed, for confirmation or otherwise of this suspicion, are of a general character. The more simple cystic disease of the ovary produces, at first certainly, but little effect on the health of the patient; but in the case of cystic cancer of the ovary, we find that although the tumor is not very large, and has possibly not existed a very great length of time, yet the health of the patient has notably given away.

Cystic cancer of the ovary has ordinarily a course differing from that of glandular tumors. The latter often grow persistently, and with such great rapidity that the whole abdomen may become, in a short space of time, distended to the utmost by a mass made up partly of cysts, partly of a sarcomatous substance. In cystic cancer the tumor is not so large.

The "compound cyst" tumor of the ovary, on the other hand, presents characters somewhat allied to those observed in more simple cystic disease; but there is great variability; and this arises from the fact that the tumor remains, sometimes, quiescent for a time, and then, perhaps suddenly, starting into active growth, produces rapidly enormous enlargement of the abdomen.

Possible Complications of Ovarian Tumor, to be considered in arriving at a Diagnosis.—When an ovarian tumor rapidly increases in size, the question should always occur, Is the enlargement due to *pregnancy?* If the tumor be of a solid character, or partly so, this is more important, but in all cases the first question which should be determined has reference to the possibility of pregnancy having supervened. Proper means must be taken, by vaginal examination, auscultation, etc., to decide this question. Experience has shown that the mistakes which have been made in undertaking operations in ignorance of the presence of pregnancy, have arisen, not from the inherent difficulties of the diagnosis, but from circumstances generally controllable.

Ascites is another complication which is rather common. It is more frequently present when the ovarian tumor is irregular in outline than when the shape is more rounded and equable, and ascites is frequently conjoined with a malignant ovarian tumor. It is sometimes necessary to get rid of the ascitic fluid by tapping, in order to explore satisfactorily the ovarian tumor.

Another important though rare complication of ovarian

tumor is gas within it. Sometimes an ovarian cyst bursts into the intestinal canal, and gas enters the cyst. Thus an ovarian tumor one day dull on percussion and fluctuating, may on another be found to have become tympanitic. The occurrence is rare.

Tapping as a Means of Diagnosis of the Nature of a presumed Ovarian Tumor.—Under some circumstances it is necessary to tap an ovarian tumor in order to release the patient from suffering; at other times this operation is undertaken as a curative measure alone, or combined with other proceedings which will be discussed in their proper place. At other times, again, tapping is had recourse to in order to throw further light on the diagnosis.

The tapping, when performed for the former of the above reasons, can be always made subservient to the further diagnosis of the nature of the tumor.

An important piece of information relates to the nature of the *contents* of the tumor. Sometimes when tapping is performed it happens that no fluid can be made to pass through the canula on withdrawal of the trochar. This may be due to great viscidity of the contents, or to the fact that in the interior of the tumor there are a multitude of small cysts, or to the circumstance that the tumor is of a solid nature. By passing a probe through the canula something more may be learned. The fluid which comes away is different in different cases, as already stated, and it does not appear that examination of the fluid affords a decided indication as to the kind of ovarian tumor. To this there is one exception in the case of the dermoid cysts of the ovary, which contain often a fluid which has this peculiarity, that on cooling it undergoes transformation into a solid mass resembling butter. Such fluid would show that we have to do with a dermoid cyst. In a case related by Dr. Alex. R. Simpson,* there was removed from an ovarian cyst of this kind a single red hair, and it was subsequently found that the cyst contained a mass of tangled hair. It was further noticed that this hair had the same color as that covering the pubes of the patient.

In cases of the more common kind, however, the nature of the fluid will not inform us as to the nature of the ovarian tumor.

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* *Edin. Med. Journ.*, March, 1862, p. 886.

To distinguish between an ascitic and an ovarian fluid is important. Ascites and ovarian dropsy should be distinguished on other data than an examination of fluid procured by tapping. The microscopic and other characters of the fluid are of service in determining its origin (see p. 346). The cells and granules vary greatly in size even in the fluids from different cysts of the same ovary: the fallacies involved in a dependence on these characters for a diagnosis are, that the ovarian fluid may have burst into the abdomen, become ascitic in fact, and thus mingled with peritonitic effusion; further, lymph and pus are not uncommonly found in ovarian cysts—hence a microscopical examination of the fluid may serve to strengthen an opinion, but alone ought not to decide one. The results of tapping in cases of fibro-cystic tumor of the uterus would not materially aid the diagnosis. Tapping and examination of the fluid removed is an important means of diagnosis in cases where the tumor is possibly of *renal* origin. Urea would be searched for under such circumstances.

If, after tapping and emptying an ovarian cyst, we find the whole of the ovarian tumor gone, we may reasonably conclude that the case is one of simple ovarian cyst. Frequently it happens that immediately after tapping there is evidence of the existence of a second cyst, or of a solid mass or masses, which were not perceptible before, and of whose existence as parts of the tumor we could not otherwise have been informed; and a case which at first appears to be one of simple cystic disease may thus prove to be one of compound cystic tumor, or of composite tumor of the ovary.

If after tapping we find a tumor still remaining, this may be another cyst from the same ovary, contained within the first, or simply in juxtaposition with it; or it may be a solid tumor or mass of cysts; it may be a cystic tumor of the other ovary, or it may be a tumor of the uterus. The diagnosis of this secondary tumor should be made carefully and with due consideration of the possibility of pregnancy.

CHAPTER XLIX.

DISEASES OF THE OVARIES—(*continued*).

TREATMENT OF OVARIAN TUMORS AND DROPSY.

OVARIOTOMY.—Statistics—Present and former Statistics of the Operation—Mr. Spencer Wells's 1,000 Cases.

TAPPING as Preliminary or as Substitute for Ovariotomy—Danger of Tapping—Method of Tapping.

INDICATIONS FOR OVARIOTOMY.—Difficulties and possible Contra-indications—Decision—Method of performing the Operation of Ovariotomy—The Abdominal Incision, the Removal of the Tumor, the securing of the Pedicle—Various Methods of dealing with the Pedicle—The Clamp, the Cautery, Ligature, and Dropping of the Pedicle—Drainage after the Operation—The Antiseptic System—Precautions during and after the Operation—Various Opinions on Value of the Latter—Cleansing the Peritoneum—Sutures—After-treatment—Shock, Hæmorrhage—Septicæmia—High Temperature, Means of lowering it.

Ovariotomy during Pregnancy.

PALLIATIVE TREATMENT OF OVARIAN TUMORS.

OVARIOTOMY.

It is no longer necessary, as was the case fifteen years ago, to offer an apology for the operation of ovariotomy, to dilate on its advantages, and to combat the arguments of those opposed to it. The signal successes of the numerous operations of late years—one operator (Mr. Spencer Wells) counting his cases over one thousand—the less numerous but equally decided results of other operators, have now removed by the demonstrative method the objections which were entertained to a formidable operation; and ovariotomy is now the recognized operation for, and the recognized best method of dealing with, almost all cases of ovarian tumor and dropsy where the operation in question can be performed.

The operation of ovariotomy, first suggested by William Hunter, was first performed in America [by Ephraim McDowell, of Danville, Kentucky, in 1809, now called the Father of Ovariotomy]. It consists, as need hardly be stated, in excising the whole of the diseased ovary, an incision for this purpose being made in the abdominal parietes. At first the operation was received with disfavor, though some few operators were tolerably successful. Dr. Clay, of Manchester, first performed the operation on an extensive scale,

and his success attracted further attention to the subject. In the metropolis the operation next obtained a firm footing, mainly through the success of Mr. Spencer Wells. The results obtained by operators of late years have been increasingly more favorable than was the case a few years since. Taking the results of numerous operations of late years by the best operators, the recoveries appear to be from 80 to 85 or even 90 per cent.

Of 100 individuals, affected with progressive ovarian cystic disease, 90 may be expected to be dead within two years if nothing beyond palliative measures be adopted. The operation of ovariotomy cures the patient, a possible drawback being—that the other ovary, becoming affected subsequently, may necessitate a second operation; a second possible drawback also being that when the ovary is affected with cancerous disease, ovariotomy will not be of permanent benefit.

As regards what may be termed the *older* set of statistics of the operation, may be cited the valuable statistical account of ovariotomy published by Mr. John Clay of Birmingham, including all cases of which he had been able to obtain particulars up to the year 1860:

In 212 cases of completed ovariotomy the operation was successful.
In 183 " " " " " " unsuccessful.
In 24 cases partial excision was performed: 10 recoveries and 14 deaths.
In 13 cases an operation was performed, but extra-ovarian tumors only were removed: 3 recoveries and 10 deaths.
In 82 the operation was begun, and abandoned on account of adhesions; of these, 58 recovered from the operation, and 24 died.
In 23 cases ovariotomy was attempted, but abandoned in consequence of the disease being extra-ovarian.

These statistics of Mr. Clay's included a number of operations undertaken at various times and in various places, and with very numerous drawbacks, want of knowledge as to diagnosis and treatment, etc. Taking these 395 cases of ovariotomy, it will be seen that 53 per cent were saved, and cured of a disease which would have left alive only about 10 or 15 per cent at the end of two or three years; that is to say, assuming the correctness of the calculation as to duration of life under these circumstances which were ordinarily accepted.

The last twenty years have been very fruitful in regard to the success from the operation of ovariotomy. The preceding paragraphs indicate the results up to the year 1860.

In the last edition of this work (1872) I stated that the results obtained in the preceding eleven years warranted the expectation that 70 to 80 per cent of cures might be expected when the operation was undertaken by experienced operators.

But during the last ten years the success of the operation has made great strides. The operation has passed from a possibly successful operation to an almost certainly successful one, and the mortality may be said to be now about 10 per cent or even less.

Mr. Spencer Wells has performed the operation in over 1,000 cases (up to June, 1880), with 231 deaths and 769 recoveries. Taking the several series of 100 cases, the deaths in the first 100 were 34; in the second series of 100, 28; and in the following series 23, 22, 20, 28, 24, 24, 17, 11; thus showing a very great diminution in the mortality during the last four years. Other operators have emulated the success of Mr. Spencer Wells: in England, Scotland, on the Continent, and in the United States of America, might be mentioned the names of operators who have each performed large series of ovariotomies with very great success and with a very low mortality.

The first question to be determined when the case is judged to require operative treatment, is whether the operation of tapping or ovariotomy is to be preferred.

Tapping is a palliative measure. In a few cases it has proved curative. It is adapted for cases where the tumor is composed of a simple large cyst filled with fluid. It is sometimes necessary as a preliminary procedure to ovariotomy, either to render the diagnosis more certain, or to relieve the extreme dyspnœa and embarrassment of the circulation, and thus to place the patient in a better state for the more severe operation.

In some cases patients are tapped, and no refilling of the cyst takes place for some time, for months or for even longer; but as a rule the cyst refills with rapidity, and to relieve the patient tappings are necessary again and again, the interval becoming progressively shorter and shorter after each operation.

It was formerly thought that tapping, by setting up adhesions, rendered subsequent attempts to perform ovariotomy more difficult. Mr. Spencer Wells's statistics, adduced in a paper read at the Royal Medical and Chirurgical Society in April, 1869, do not, however, bear out this view,

for the percentage of mortality of ovariotomy after repeated tapping, compared with that of ovariotomy without tapping, was only 1 per cent greater in the former than in the latter case.

Mr. Spencer Wells* in his lectures advises tapping to be performed first in all cases of simple cyst, and he stated that he knew of many cases where the cyst never refilled after the tapping. [These were cysts of the broad ligament, and not true ovarian cysts.]

The dangers connected with tapping are—1. The possibility of puncture of a large vessel in the abdominal parietes. 2. The possibility of puncture of a vessel of the cyst itself, which might subsequently continue to pour out blood. 3. The production of septicæmia. This latter would be prevented almost certainly by antiseptic precautions. 4. The escape of irritating cyst contents into the peritoneum and production of inflammation thereby. It appears that as a matter of fact large experience does not show that these dangers are considerable, and they seem much less than they were formerly supposed to be.

The operation of tapping is usually performed through the abdominal parietes, when the object is palliative. The operation of tapping from the vagina is generally performed with other views, to be spoken of presently. In some cases ovarian cysts have been evacuated by tapping from the rectum.

Tapping was for a long time the only operation attempted in cases of ovarian dropsy. In some cases tapping is impossible, as when the tumor consists of many cysts, or when it is wholly solid: these cases do not require to be discussed. If the distension of the abdomen for which the relief is necessary has been slowly advancing, there appears no reason why tapping should be postponed; but if it be recent, it is advisable to wait longer before operating—that is to say, when the cyst is single, and there is no indication for ovariotomy.

In some instances we find it difficult to say whether the tumor be a single large cyst or not: here *other* cysts at the base of the tumor would determine us on advising ovariotomy in preference to tapping. In such cases it may be deemed better to pursue the following course: to tap the

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* Lectures at the Royal College of Surgeons, 1878. *Brit. Med. Journ.*, July, 1878.

cyst and ascertain, in the manner previously pointed out, whether such secondary cysts be present or not, and, in the event of such being found, to proceed at once with the more radical operation of ovariotomy.

After all, in the majority of cases the decision will probably more and more incline in favor of ovariotomy rather than tapping, the risk of the radical operation being so little in excess of that of a measure which is only palliative.

Mode of performing the Operation of Tapping.—The readiest and, on the whole, the safest method of performing the simple operation of tapping, is to place the patient on the back, and to allow the fluid to escape through a flexible tube into a vessel placed by the side of the bed or couch. The best situation at which to make the perforation in the abdominal walls is the median line, there being thus less risk of wounding vessels. It is best to make a small incision in the skin first, in order to allow the trochar more easily to pass through the abdominal wall. The canula should have attached to it, as in Mr. Spencer Wells's instrument, a long india-rubber tube. The contents of the cyst escape on withdrawal of the trochar. Mr Wells uses a rather large trochar, the point made like a steel pen, and a blunt canula is added, so as not to injure the cyst wall opposite. It is hardly necessary to observe that the bladder should be very carefully emptied by the catheter before proceeding to the operation. If during the operation the canula become choked up, a long probe should be used to remove the obstruction. During the escape of the fluid gentle pressure may be exercised on the abdomen. After completion of the operation a wide flannel bandage should be carefully applied, the wound being previously covered over by a piece of lint soaked in collodion or carbolized oil, folded in the form of a compress. Should fainting occur during the operation, brandy or other stimulants must be given, and the cyst evacuated more slowly. Quiet after the operation is very essential, and the body should be kept as nearly as possible immovable for at least twenty-four hours after the operation, the catheter being used to evacuate the bladder.

The cyst inflammation liable to arise after tapping is accompanied with great pain, great tendency to nausea, or actual vomiting, and general symptoms of peritonitis. Warm poultices, iced drinks to allay the vomiting, are the best remedies in such cases, and small quantities of stimulants—brandy or champagne—may also be administered.

If the symptom assume a severe form, the operation of ovariotomy should be performed forthwith.

Tapping followed by Pressure.—This is a method of treating cases which at the present day it seems useless to discuss.

Tapping followed by iodine injection is also a procedure not necessary now to discuss, as it has been discontinued.

We may next consider the *indications for ovariotomy.* The average opinion among those in favor of this operation may be stated as being to the effect that when the ovarian tumor is growing fast, and when by reason of this, or in some other manner, life is threatened at no distant period, the operation is to be recommended. But it is necessary to be more explicit. If our examination convinces us that the tumor is of cystic nature, that it is growing fast, that it is made up of three or more cysts, and the general health is threatened, this seems a case for ovariotomy. Equally so if the tumor be partly cystic, partly solid, this solid matter not being cancerous. The alveolar tumor of the ovary falls under the same category, and also cases of dermoid or fat cysts "progressive" in nature. If the ovarian tumor be simply fibrous the operation is less likely to be required, but even here the tumor may excite so much irritation that an operation is a better procedure than letting the tumor alone. These solid tumors have an atmosphere of doubt about them, however, which puts them out of ordinary categories. The operation in such cases is often an "exploratory" one, the operator determining beforehand to remove the tumor if possible (see Diagnosis).

Upon the next class of cases the decision is sometimes not to be made at once. They are cases in which there is only one cyst in the ovary, or possibly two, and the disease is not strictly a progressive one; or, at all events, this quality of it has not yet declared itself. In some such cases, ovariotomy is not at all events immediately required, but there are cases in which there are good reasons for preferring to recommend ovariotomy—viz., where there is rapid formation of fluid requiring frequent tapping, and threatening life in this manner. A tendency of this kind is hardly less destructive to the patient than the tendency to the rapid formation of other cysts. The arguments for ovariotomy in cases where the "badness" of the case falls short of that just spoken of, are, that the earlier the operation is performed the safer it is, and the less risk also that the opera-

tion will be interfered with by the presence of adhesions. The difficulty experienced in deciding as to what is the best thing to be done in individual cases is one which cannot be got over by any amount of generalization on the subject, and in a doubtful case small things turn the balance.

Another class of cases in which ovariotomy might be performed is that in which, although the case is not a "favorable" one for operation, the disease is so far advanced that the patient must otherwise certainly die soon, and where the operation might possibly save life.

Mr. Spencer Wells* says on this subject: "In cases where tapping could be of little use, or has been tried, and fluid was re-formed after repeated tappings, and all ordinary treatment has proved of no avail, then arises the question, 'Is this a case in which ovariotomy should be recommended to a patient?' the common-sense rule that I have been in the habit of following has been to say to a patient, or to the medical men with whom I am in consultation, So long as this patient is moderately comfortable, so long as she can walk a mile, or for half an hour, without inconvenience, so long as she can get up and down stairs, so long as there is no great pressure upon any of the organs of the abdomen or pelvis, and she can breathe pretty well, and her heart is not interfered with—such a patient as that may be left to ordinary palliative treatment, with the usual attention to the general health."

[Tapping is not without danger, and is now seldom resorted to. I have seen two cases of ovarian tumor of such enormous size that it was necessary to tap the patient as a preparative for radical operation. If in such cases the operation should be undertaken without preliminary tapping, the sudden removal of a large collection of fluid with the operation superadded, would be attended with more risk to life than if the fluid was removed and the operation postponed until the patient, by good nourishment and nursing, would be better able to undergo it. We were taught a short time ago, as our author has shown by quoting from Mr. Wells, that we should never perform the operation of ovariotomy until it was absolutely necessary to save the life of the patient.

These doctrines no longer prevail with the progressive men of the day. Dr. Granville Bantock, of the Samaritan

* "Lectures Royal College of Surgeons," *loc. cit.*

Hospital, in an admirable paper on the early removal of ovarian tumors, demonstrates beyond question that as a rule this is decidedly the safest method to pursue. If we operate early the patient has more strength to recover from it, and the tumor is less liable to be bound down by adhesions. A tumor without adhesions is removed with greater facility and less danger, other things being equal, than one with extensive adhesions.

If we allow the tumor to grow to a large size there is always danger of attacks of local peritonitis, resulting in adhesions.

The operation of ovariotomy is more successful now than it was a few years ago, and one reason of this is that we operate earlier, and before these accidental attacks of peritonitis have done the mischief which we always dread. My advice, then, is never to tap the patient unless the tumor is so large that it would be unsafe to do the operation and the tapping at the same time. Further than that, ovariotomy is justifiable even if the tumor does not reach half way up to the umbilicus. I am satisfied that early operations as advocated by Bantock will soon become the rule.]

Difficulties and Possible Contra-indications.—One source of difficulty arises from *adhesions.* The diagnosis of adhesions is sometimes quite impossible to make, but very extensive adhesions have not been found by any means an insuperable difficulty in the way of the performance and completion of the operation. When a portion of the tumor is in the pelvis, we may often ascertain whether adhesions are present or not, by pressing the tumor upward from the vagina, and by the mobility or otherwise of the tumor thus found to exist. Mr. Wells suggests that the tumor should first be tapped, and pressure then made from below, in order to ascertain the presence or absence of this mobility. But it is to be remarked that the shape of the lower part of the tumor might prevent its being thus moved from below, adhesions being absent. A careful examination through the abdominal walls may show that there is mobility of the tumor; this indicates absence of adhesions. Again, as pointed out by Mr. Baker Brown, the skin can be grasped and separated from the tumor if there are no adhesions. These signs, however, for the most part affect the diagnosis of adhesions *anteriorly.* The intestines are liable to contract very close adhesions with the tumor in long-standing cases, and these adhesions are posterior. Respecting ex-

istence of posterior adhesions, the results of examination are not conclusive. Practically, I am certain that the question as to the presence or absence of adhesions is one which must frequently remain unanswered until the operation is begun. Adhesions may be expected in cases where the patient has been repeatedly tapped. *Anasarca* of the lower extremities is justly regarded by Mr. Spencer Wells as not necessarily a bar to the operation, for, as he observes, it may depend solely on mechanical pressure of the tumor. I have myself seen very marked œdema of the lower extremities, from retroversion of the uterus, together with extreme distension of the bladder. When it is dependent on associated disease of the kidneys or other viscera, or on cancerous disease, œdema is undoubtedly a contra-indication. One of the worst cases of œdema of the lower extremities I have seen was one in which the tumor turned out to be cancerous. And the remarks of Mr. Wells in reference to *ascites* are equally to the point. If the ascites be mechanically produced, it is of less consequence. In the case of a small, *recent* ovarian tumor, where there is a good deal of ascites, the operation is contra-indicated, because there is a greater probability of the disease being of cancerous nature. It not frequently happens that there is much ascites and a very large tumor. In such cases, as a rule, the ascites is no obstacle whatever to the operation; in some respects it is an advantage, as adhesions are less likely to interfere.

The contra-indications which have been laid down by some operators, such as the health being very much broken down, where the drain of albuminous matter by repeated tapping has been great, the disease being of a colloid nature or otherwise materially departing from the true cystic character, where, from the habits of the patient, other organs have suffered, organically, to the serious detriment of their functions,—these restrictions are undoubtedly very much to the purpose if the success of the operation alone be considered, and they offer an important addition to the arguments in favor of "early" operation. But, as before remarked, there is a class of cases in which the operation is justifiable as a *dernier ressort.* This is a point on which it seems hardly possible to lay down laws. Each case has a law of its own, which law it is the business of the practitioner to discover. Dr. Keith of Edinburgh has recorded a case in which he performed the operation when the cyst

was actually in a state of gangrene, and with success, the patient being snatched literally from the jaws of death. Dr. Wiltshire with Dr. Watson operated on a patient dying from hæmorrhage into an ovarian cyst under equally critical circumstances; the patient survived; and Dr. Keith more recently stated that he had operated fourteen times in cases of acute suppurating or putrid cysts, with twelve recoveries.

Cases where the tumor turns out to be cancerous are of course the most unfavorable of all, not so much as regards the immediate prospect of recovery from the operation as in respect to its ultimate effect, or rather want of effect, in saving life. The age of the patient, composition of the tumor, the presence of adhesions, etc., do not appear to materially influence the result, the patient having an almost equally good chance of recovery if the operation is completed.

The decision for or against ovariotomy should be left to the patient or her friends; it is for them to take the responsibility. It is our duty, firstly, to make a diagnosis as accurate as possible, taking the whole circumstances, past and present, into consideration; secondly, to make to the best of our ability a prognosis of the case, and to lay before the patient and her friends the results arrived at.

Mr. Spencer Wells says: "The probable result of ovariotomy can be estimated with far greater accuracy by a knowledge of the general condition of the patient than by the size and condition of the tumor; and from a patient with a good sound constitution one can remove a very large tumor having very extensive adhesions, and she will probably recover; whereas, among people who have been drunkards, or in whom the constitution has otherwise been impaired, or who have a feeble heart, unhealthy kidneys, or diseased liver, the operation is much more hazardous than in a healthy person. The size of an ovarian tumor alone has not appeared to me to affect the result very much; the removal of some very large tumors has been followed by recovery, whereas death has followed the removal of much smaller ones. And a patient who is accustomed to the life of a sick-room bears an operation much better than a person taken from the ordinary pursuits of active life and at once subjected to an operation."

"The size of an ovarian tumor alone, I say, does not very much affect the result; but, if it be a very solid tumor, requiring a very large incision for its removal, the incision

extending very nearly to the sternum, then the risk is very much greater. I have found, if a tumor could be removed by an incision not exceeding five or six inches in length, the mortality is considerably less than when it necessarily extends to nine, ten, or eleven inches. Adhesions, if only to the abdominal wall, do not much affect the result; if they be low down in the pelvis, the mortality is considerably increased by them."

"Almost the only positive contra-indication to an operation, I think, would be the fact that the patient has some other disease which, if it pursued its natural course, would certainly kill her."

"With regard to the suspicion of cancer, and how far that should decide the surgeon not to remove an ovarian tumor, I think, if one were certain it was cancerous, one ought to be content with tapping, removing any peritoneal fluid that might be formed around it, and not attempting to remove it. The disease would almost certainly return. But still again I have seen some very extraordinary cases in which I have removed ovarian tumors which appeared at first sight to be ordinary multilocular tumors, and where a careful examination showed evident proofs of malignant growth, yet the patients for a long time remained in good health. In one case it was ten or eleven years before there was any return. So I think even the knowledge that a tumor was in all probability cancerous would not allow one to put operation aside altogether; but it necessarily obliges the surgeon to be very much on his guard."*

THE OPERATION OF OVARIOTOMY.

Mr. Spencer Wells's instructions as to the operation are as follows:

"The place, I need hardly say, should be as healthy a place as we can find. The patient should be lodged in the best house, in the best sanitary condition, and in the best room, that can be secured for her. The room must be so arranged that, after the operation, she can be kept perfectly quiet; it must be well ventilated, though she must be protected from any current of cold air, and at the same time not overheated.

"The bowels should be relieved, and any evident concen-

* *Brit. Med. Journ.*, June, 1878.

tration of urine corrected by citrate of potash or some other simple saline. [To these precautionary hints of Mr. Wells it is proper to add that no solid food should be given on the day of the operation. It is of course essential that the operator, and all present at the operation, be free from all suspicion of *post-mortem* taint. A nail-brush should be carefully used by the operator and assistants.]

"The table on which the operation is performed should be arranged near a window, so that the light falls on the table diagonally. The patient is brought in and lies down on the table. Her feet and legs are carefully wrapped up; and she is covered by a blanket, and a strap is fastened over her knees, so that she cannot throw her limbs about. It is well also to tie the hands; and nothing is better for this purpose than an ordinary bandage, making a loop, passing it over the sleeve of the dressing-gown, and tying the hands down to the legs of the table. Each hand should be tied down. In the next place, one wants to protect the clothing. If she have simply a night-dress on, with a flannel about her shoulders, she and the bedding are completely protected by the use of a sheet of waterproof cloth with a hole in the centre, around which on the inside adhesive plaster is spread to the extent of an inch or an inch and a half. That is thrown over the patient, and adheres to the skin of the abdomen, which, I should say, ought to have been previously well cleaned. The upper part of the sheet comes up nearly to the chin of the patient. Lately I have had it made larger; and we have a simple contrivance by which the sheet can be held up in order to protect the patient's face from the carbolic spray, supposing it to be used. The patient lying thus, with the gentleman giving chloroform at her head, she is completely protected by the india-rubber cloth from the spray, which is directed from the spray-producer, and plays upon the abdomen."

Mr. Wells prefers the bichloride of methylene as an anæsthetic. Provided it is carefully given, by means of Junker's apparatus, he has never seen the slightest cause for anxiety.

"The nurses have sponges and water all ready—sponges of a certain size, thoroughly well cleansed and in sufficient number, neither too large nor too small. If they be too small they may be lost, and if they be too large they cannot be introduced. The assistants are ready. There are only two required; one stands opposite the operator to be

prepared to assist him in tying any vessel, and more particularly in preventing the coming out of intestines after the escape of the cyst from the abdominal cavity. If the assistant be not careful, as the cyst is drawn out the intestines follow, and give a great deal of trouble; but, if he carefully hold up the abdominal wall, keeping the edges of the wound together, it is impossible that any intestine can follow the cyst as it escapes. He passes the middle finger inward under the umbilicus, and the forefinger to the right and the thumb to the left of the wound, and holding the edges closely together as the tumor comes out of the abdomen.

"Then, as to the instruments. First, an ordinary scalpel —working rather with the point of the instrument than with the shoulder. Next we have a number of what are called my torsion forceps, to hold any vessel in the abdominal wall. Supposing any vessel is bleeding, it is caught in a moment, and the forceps hang down holding the vessel, so that, when the peritoneal cavity is opened, no blood drops into it. I have them plated with nickel, so that they never rust. The bleeding vessels having been stopped, the next step is to divide the peritoneum, catching hold of it previously with the forceps or by one of these little hooks. The advantage of the hooks is that one is less likely to catch a bit of cyst with it. If the cyst be lying close to the abdominal wall when you are catching up the peritoneum with the intention of dividing it, you may catch the cyst also, and sometimes divide it as well as the peritoneum. That is avoided by using this hook. One or two flat touches of the scalpel on the peritoneum are sufficient to divide it. Then a broad director is passed into the opening, and, with a blunt-pointed knife, the peritoneum is very safely divided. I rather insist upon this blunt point, because, with a sharp-pointed instrument, supposing there is a bit of intestine adhering to the abdominal wall, it may be injured, or a sharp-pointed knife might enter the bladder if it were high up. Having laid bare the cyst by the incision of the peritoneum to the extent of three or four or five inches, it then becomes necessary to empty the cyst, and this done by a trochar like that used for tapping, but of a larger size, and furnished with outer spring-hooks to fasten the cyst. It is passed into the cyst, then the point is withdrawn, and the fluid rushes through the canula into the pail below the table.

As that is done, the outer hooks are opened, the cyst is caught hold of and easily fastened to the canula, and pulled out through the opening in the abdominal wall; the fluid passes out, the cyst is held by these grasping claws, and, if the cyst be free, it of course readily and easily follows the instrument. If adhesion be noticed as the cyst comes out, it may be separated." *

The length of the incision first made is usually from the umbilicus to the pubes. In some cases this is found to be enough: the cyst can be emptied and drawn out, and no extension of the wound is required. But the incision has often to be lengthened above the umbilicus in order to allow of the moving of the tumor.

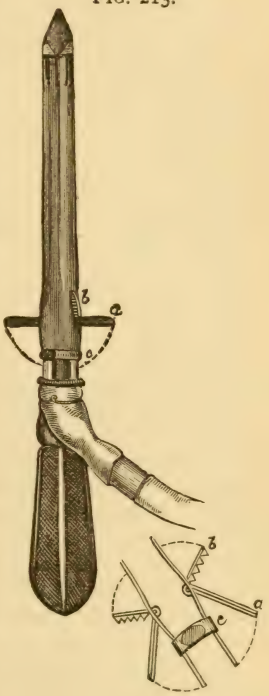
The next step is to ascertain that the continuance of the operation is possible. If the tumor is found to be solid, no further steps should be taken until, by means of the hand introduced above or by the side of the tumor, it has been ascertained that the tumor is actually removable. In some cases this may be dispensed with, the tumor being of cystic character, but even in these cases it is well to carry out this intra-abdominal exploration at this stage of the procedure. If adhesions be at once encountered, such adhesions must of course be separated in order to allow of this exploration.

The incision first made may be sufficient to allow of the extraction of the tumor without lessening the size of the mass, but generally this lessening is necessary; and the operator having ascertained that the completion of the operation is possible, and having broken down any adhesions met with in the manner to be presently described, a large trochar is thrust into the presenting cyst and its contents evacuated. A good apparatus to use for this purpose is the siphon-trochar invented by Mr. Spencer Wells. The tube is about the size of the finger. In a modification of it suggested by Dr. Murray (see Fig. 213) the canula, after being plunged into the cyst, is firmly fixed to the cyst wall. It can be easily detached again from the cyst. The trochar is withdrawn through a slit in the india-rubber tube, which slit then closes and allows the fluid to pass away through it. Another excellent form of the instrument is provided with rather blunt claws, which can be readily made to seize the edges of the perforation in the cyst. The advantage of a large tube for rapid re-

* *Loc. cit.*

moval of the fluid is great; it is also important to prevent the fluid running into the peritoneal cavity. These objects are well secured by use of the above-mentioned instruments. If the cyst contents be semi-solid or very gelatinous, this instrument cannot be employed; but ordinarily it is very useful at this stage of the operation. It may be necessary to empty more than one cyst; in this case the second may generally be perforated from the aperture in the first. If the cysts are very small and numerous, it may be necessary to break them up by passing the hand into the centre of the tumor; but before doing so we should be absolutely certain that adhesions such as to prevent completion of the operation are not present. Having thus lessened the bulk of the tumor, it is drawn out at the aperture and supported by the hands of assistants, care being taken that no dragging is allowed. It is evident that unless great care be exercised much mischief may be done at this moment. The tumor having been drawn out, the pedicle is to be secured. Before alluding to this part of the operation we must consider the question of adhesions. On exposing the tumor we may find that it is adherent; and it may be adherent to the bladder in front or laterally, to the intestines, or everywhere. The most difficult adhesions to surmount are those between the tumor and the bladder, or the intestines, or omentum, but adhesions in other situations are generally not real obstacles. These adhesions are not to be separated by the knife: they are to be carefully broken down by the fingers or by the handle of the scalpel. An "adhesion clam" has been invented by Mr. John Clay for this particular purpose.* The actual cautery

FIG. 213.



* See *Med. Times and Gaz.*, vol. ii., 1862.

is exceedingly safe and useful in separating thick and strong adhesions. The bleeding from vessels in these adhesions requires to be carefully looked to. The torsion or pressure forceps used by Mr. Spencer Wells are most valuable instruments for dealing with hæmorrhage at all stages of the operation. They are made of various forms and sizes, so that, no matter where the bleeding point is, it can be seized and held by the spring action of the forceps without further attention being for the moment required. At a later stage of the operation fine silk ligatures are employed where found to be required. Great care is necessary, when the intestines are adherent, to avoid perforating them: in very long-standing cases the difficulty of avoiding such perforation is or may be very great. When the cyst cannot be separated from the intestines, Mr. Spencer Wells advises that a piece of the cyst be cut off and left attached, the lining membrane of the cyst being also removed.

When the tumor is quite clear of all adhesions, and the necessary diminution of its bulk effected, the pedicle is to be secured. In order to perform this part of the operation satisfactorily, the tumor must be properly sustained by assistants. In most cases it is better to apply a temporary ligature and cut away the bulk of the tumor, in order that the pedicle may be more conveniently dealt with.

Treatment of the Pedicle.—During the last three or four years the method of securing the pedicle which has been most largely employed is one used some time ago, by Dr. Tyler Smith, of tying it with silk ligatures, two or more, according to circumstances, cutting these off short and leaving the stump to take care of itself; and it appears probable that this method will come to be almost universally employed.

The Clamp.—Mr. Jonathan Hutchinson introduced the use of a clamp (see Fig. 214), by which the pedicle is constricted, brought out to the level of the abdominal wound, and there maintained in a fixed position, the wound being then closed around the stump of the pedicle. The double object of preventing hæmorrhage and keeping the stump of the pedicle at the surface of the wound is thus secured.

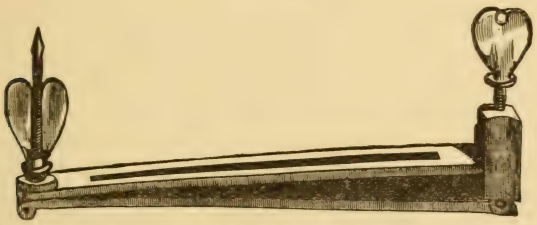
Mr. Spencer Wells's clamp is composed of two slightly curved blades meeting somewhat like scissors, and acting in such a way that the pedicle, if broad, is compressed into a rounded shape and its bulk thus reduced. This clamp

and another one which had been previously largely used, and of which it is a modification, is provided with long handles enabling the operator to use great compressing force. The handles are capable of removal when the pedicle has been secured.

Mr. Wells for some years used the clamp almost exclusively, but now employs silk ligature.

Application of the Actual Cautery.—To Mr. John Clay of Birmingham is due the merit of first applying the actual cautery in cases of ovariotomy, but he used it for the purpose of destroying adhesions only. Mr. Baker Brown first employed it for cutting and closing the pedicle. In this procedure the pedicle is enclosed between the two blades of a clamp of peculiar shape; these are then screwed very

FIG. 214.



tightly together, and a wedge-shaped cautery-iron at a moderate red heat applied so as to cut through the pedicle. The parts are cut through slowly and deliberately, the clamp is then unscrewed, and the stump allowed to drop into the pelvis. In some cases the vessels are not completely closed, and after taking off the clamp it is found that there is some escape, necessitating the application of ligatures. The cautery-clamp has a twofold action: it compresses and crushes the pedicle for a thickness of a quarter or a third of an inch, and it sears the surface. And it must be employed in such a manner that these objects are well attained.

The cautery has been extensively employed of late years, Dr. Keith having performed many very successful operations with its aid.

Of other methods of securing the pedicle the old method of tying it and bringing the ligature ends outside has been entirely given up. The method of fixing the pedicle by stitches to the edge of the wound is now only adopted in

cases of incomplete operations, where, for instance, a cyst has been emptied but cannot be removed.

The Silk Ligature and Pedicle dropped.—Dr. Tyler Smith was, I believe, the first to employ the method of applying a ligature and dropping the pedicle, but other operators did not at that time follow up this procedure. Recently, however, as already stated, the silk ligature has been extensively employed. Speaking on the subject,* Mr. K. Thornton states that after this operation he has observed five conditions—(1) Union of opposite sides of the ligature; (2) vascularization of lymph over the ligature; (3) adhesion of stump to adjacent parts; (4) fatal hæmorrhage due to escape of one or more of the large veins at the outer edge of the pedicle from the external loop of the ligature; (5) the ligature uncovered round the pedicle when diffuse peritonitis and effusion of serum had occurred.

The material employed is generally pure Chinese silk, sufficiently thick to admit of being tied firmly, but not too thick, and properly carbolized. When the pedicle is not large, two ligatures are sufficient, and for this purpose a needle, which Mr. Wells prefers to be blunt pointed, is passed through the stump, armed with a double ligature. Each half is then tied separately, and the whole stump then surrounded by a third ligature. When the pedicle is thick or wide it requires to be tied in more than two detachments. The ligatures should be made to lock in each other. A further precaution is necessary, viz., that too much should not be enclosed in any one ligature, otherwise it is liable to slip through afterward; this latter accident is more particularly liable to happen at the outer border of the stump. Dr. Bantock suggests that a small outer ligature should be applied at the edge of the pedicle so as to get a groove for more certain fixing of the outer ligature.

It is desirable to exercise great care in the adjustment of the ligatures on the stump, to be quite sure that each ligature does its work, and that it has not too much to do. This must be ascertained after the stump is dropped, and it must be certain that no escape of blood occurs. The ends of the silk ligatures are finally cut off.

The dropping of the pedicle appears to answer extremely well, and as the abdominal wound is completely closed afterward there is less risk of septic action than when the

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* *Brit. Med. Journ.*, Jan., 1878.

clamp is used. The cautery plan has the same later advantage also, but it is less certain than the ligature in regard to its preventing hæmorrhage afterward.

Drainage in Ovariotomy.—A few years ago much attention was paid to the subject of drainage, and cases were published by Dr. Marion-Sims and others in which it had been found serviceable to remove septic products formed in the peritoneal cavity after ovariotomy by drainage. Dr. Marion-Sims has all along insisted on the extreme importance of complete and continued evacuation of septic material from the peritoneal cavity after ovariotomy. Drainage was performed in two ways, by the vagina or by the abdominal opening. The drainage by the abdominal opening, as carried out by Dr. Keith of Edinburgh, consisted in introducing glass tubes perforated at the extremity and opening between the lips of the abdominal wound.

Dr. Bantock and Mr. Thornton have also practiced drainage after the method of Keith. But since the introduction of the antiseptic method of operating, the drainage plan seems to have been almost entirely relinquished. It has not been found necessary, either because the ligatured and dropped pedicle is less likely to occasion septic irritation or because of the influence of the antiseptic spray. And it is disputed as to which is the real cause of the diminution in the septic disturbance which has followed more recent operations.

[The subject of drainage after ovariotomy was brought up incidentally in a discussion in the Surgical Section of the International Medical Congress, in London, in 1881, when Dr. J. Marion-Sims expressed his views as follows:

"I do not share the fears expressed by some on the subject of drainage.

"In abdominal surgery we have a large and active absorbing surface. Some patients will survive the absorption and elimination of a large amount of septic serous fluid, while others will succumb rapidly to the absorption of a small quantity.

"There is no special danger in introducing a glass tube into the peritoneal cavity through the lower angle of the abdominal incision; for nature protects the peritoneum by sacculating the tube completely by the exudation of lymph which immediately becomes organized. If there is no bloody serum to drain off, the tube may be removed in a few hours and no harm is done. But if there is something to be

drained it soon makes its appearance at the open end of the tube, and is readily absorbed by sponges placed to receive it.

"Mr. Spencer Wells and Mr. Thornton no longer use drainage tubes in abdominal surgery. But I think they may occasionally find cases in which it might be useful.

"The tube is now excluded on the theory that Listerism renders the peritoneal effusion aseptic, and therefore that its absorption will not be attended with risk to life.

"But is this always so? I fear not—and let me illustrate this uncertainty by a case, one that is by no means unique.

"In December, 1878, I assisted Mr. Spencer Wells with an ovariotomy, in one of the suburbs of London. The case was altogether a very bad one. Knowing well its difficulties and dangers, he put off the operation till at last it was obliged to be done to save the life of the patient.

"Adhesions in the bottom of the pelvis were universal and strong. When the external wound was closed, Mr. Wells saw that there was some bloody exudation going on, but supposing that Listerism had rendered this aseptic he had no fears for the result.

"The patient went on well enough for thirty-six hours, but after that fears were felt for her safety. Fortunately at this period of anxiety bloody serum was found exuding from the lower angle of the wound, and Mr. Spencer Wells removed the two lower sutures, and opened the wound sufficiently for the free discharge of the septic bloody serum, and the patient made a rapid recovery.

"Now I do not pretend to say that the patient would necessarily have died if the accidental discharge had not so positively pointed out the method of immediate relief to urgent symptoms; all this poisonous fluid might possibly have been absorbed and eliminated, but was there not great danger in waiting for nature's effort in this direction?

"But of this I am sure. If the drainage tube had been used, this fluid would have been drained off, as it was extravasated, and there would not have been the least cause for alarm for the safety of the patient.

"The only objection that can be urged against the drainage tube is, not in any immediate danger, but in its ultimately predisposing to the production of ventral hernia. And this is a serious objection, one that we who advocate its use must learn to obviate. Some one must work out this problem, and I am sure that it can and will be done."

Keith occasionally uses the drainage tube, Bantock does frequently, Lawson Tait has lately adopted it. He opposed its use till he lost a patient that might have been saved by drainage.]

The Antiseptic Method of performing Ovariotomy.—The "Listerian" precautions for performing operations have been applied to ovariotomy during the last four or five years by some of the most celebrated operators—Mr. Spencer Wells, Dr. Thomas Keith, Mr. Thornton, and others in this country. It has also been largely employed on the Continent, particularly by Nussbaum of Munich.

Dr. Keith, writing in 1878,* said that since 1876 he had performed all his operations under the "spray." His last 41 cases (under spray) had all been successful. The advantages were—(1) that the mortality was lessened; (2) that early operations could be more safely recommended; (3) drainage less required; (4) convalescence easier; (5) antiseptics a great comfort to the operator. Writing more recently on the subject, however, Dr. Keith appears to have altered his views in a material degree. Mr. Spencer Wells, in his paper recording results of 1,000 operations† up to June, 1880, says that before 1878 he had taken all other possible precautions, but in that year he adopted the antiseptic plan. Previously, in no series of 100 cases had mortality fallen below 17 per cent, but in the last series of 100, all done antiseptically, the mortality fell to 11 per cent. His total number of antiseptic cases up to that time was 134 with 13 deaths, or a mortality of 9·7 per cent. He says, further, that soon after adopting antiseptic precautions he began to adopt the intra-peritoneal method of treating the pedicle; but he says, further, that before he had made this latter change he had noticed that the antiseptic plan made a great difference in his mortality. With it he finds drainage scarcely ever necessary.

Mr. Knowsley Thornton‡ is a strong advocate of Listerian ovariotomy. He considers that he has reduced his mortality by 9·35 per cent. On the other hand Mr. Lawson Tait and Dr. Bantock express themselves as not satisfied with the good effects of the "spray" in this operation. Mr. Tait§ considers that the introduction of the intra-peritoneal

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* *Brit. Med. Journ.*, Oct., 1878.
† "Med.-Chir. Trans.," vol. lxiv.
‡ Ibid., vol. lxiv., p. 139.
§ Ibid., vol. lxii., p. 161.

method is to be credited with the lowered mortality of ovariotomy, though he is not prepared to say that the antiseptic system is absolutely without results. Dr. Bantock* contends that the carbolic spray as ordinarily used is responsible for high temperature afterward. He has gradually reduced the strength of the spray to 1 in 150, and even lower, and finds still good results. He considers also that it acts as a poison in some cases.†

The employment of the carbolic spray throughout a long operation, such as ovariotomy occasionally is necessarily found to be, appears undoubtedly liable to prove detrimental. But, supposing this to be the case, the carbolic spray may still make shorter operations more safe. Further, the use of carbolic spray is only one of the antiseptic precautions which the Listerian system includes: the carbolization of instruments, sponges, and apparatus generally, must add very much to the safety of the operation, even supposing the carbolic spray not to be employed.

When the tumor is removed and the pedicle secured, the next procedure is to thoroughly cleanse the peritoneum by carefully sponging it and removing any blood or fluid which is found. In some cases this is not necessary when the tumor has been removed without laceration or escape of blood or fluid into the peritoneum. Any bleeding points have to be secured by ligatures; any torn adhesions giving rise to escape of blood must be looked to. This "toilet" of the peritoneum, as it has been aptly termed, is most important. Sponges employed in this final cleansing process should be clean ones.

The sutures for the purpose of securing the edges of the wound are next introduced. They are usually of strong silk. They are introduced from within, just securing the edge of the cut peritoneum and securing coaptation of the two peritoneal edges. It is a good plan to place a large flat sponge under the wound, while the needles carrying the sutures are put in. Each suture should have two needles. When the whole are inserted the sponge is removed and the sutures tied. Before fastening the wound Mr. Wells is particular to insist on the sponges being carefully counted to see that none are left behind. When pressure forceps are employed, these also should be counted.

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* "Med.-Chir. Trans.," vol. xliv., p. 103.

† See discussion on this subject, *Lancet*, Dec. 18, 1880.

Before closing the wound it is necessary to examine the other ovary and to ascertain whether it be sound. If there be a decided cystic tumor of the other ovary, and of such a character as to render it probable that it would, if left, grow and necessitate a further operation, it should be removed; but it may be questioned whether it is advisable to meddle with it under any other circumstances. It must not be forgotten that the *normal* Graafian follicle when near the time for bursting is of considerable size. The removal of the second ovary would be effected in precisely the same manner as the first, but more easily and expeditiously.

When the sutures are secured the skin must be cleansed and dried, and a piece of cotton-wool laid over the sutures. Adhesive plaster is then applied over all, so as to help to sustain the edges of the wound in apposition. Finally a roller with more cotton-wool may be applied, the patient thoroughly dried, and placed in bed with hot-water bottles to the feet.

The *after treatment* is a manner of the greatest consequence, for it matters little how well the operation may have been performed if there is allowed the slightest defection in the care administered subsequently. A very little neglect will nullify the most promising hopes.

The patient must be sedulously watched by a specially trustworthy and competent nurse; she must not be allowed to move. The room must be kept moderately warm, and at an *even* temperature, but well ventilated. The catheter must be employed twice or thrice in twenty-four hours.

When the intra-peritoneal plan of securing the pedicle is adopted, the wound requires no attention for two days or more. It is sufficient to see that there is no escape or formation of matter. The spray may be used in dealing with the wound afterward. It should be carefully treated with antiseptic precautions in dressing, if there be any delay in the healing of the wound. Dry cotton-wool is an admirable means of preventing contact with air and is highly antiseptic. The sutures may be left for five or six days as a rule. On their removal strapping should be carefully applied.

As regards food, it is best to avoid giving food by the mouth at first, to give only a little ice to suck occasionally, but to give nutrient injections every six hours, commencing to feed the patient in the ordinary way, at first by milk or beef-tea. After the second or third day, according to cir-

cumstances, small quantities of stimulants may be given if the pulse is weak and quick. Twenty drops of laudanum should be added to the injection night and morning for the first three days.

The bowels should be unloaded by a simple enema of warm water on the fifth day.

It not unfrequently happens that the state of the patient just after the operation is one of great exhaustion; or shortly afterward vomiting, very difficult to control, may set in. As regards the exhaustion, it is to be overcome by giving a sufficient quantity of brandy and water or brandy and beef-tea by the rectum, which, if it appear necessary, may be repeated at frequent intervals subsequently. Ice by the mouth is best for the sickness. Repeated deep inspirations help to get rid of the chloroform or other anæsthetic, and thus tend to allay the vomiting immediately following the operation.

Death after ovariotomy results mainly from shock, from hæmorrhage, or from septicæmia. A weak heart, diseased lungs, or other general ailment, may be the main fundamental cause.

We have to avert the tendency to death, whatever that may be. For *shock*, restoratives—ammonia, brandy, champagne, opium, may, one or all of them, be employed. For *hæmorrhage*, which may occur internally and will be recognized by the feebleness and frequency of the pulse, together with a progressive faintness, the only efficient remedy is of course to arrest it. It may be necessary to reopen the wound and secure the bleeding vessel if there be good reason for suspecting that bleeding is going on. A troublesome form of hæmorrhage is that which arises from a large surface of torn adhesions. Application of perchloride of iron appears to be the best remedy in some of such cases. A limited bleeding area would be best treated by the actual cautery.

For *septicæmia*, which may be used as a general term for peritonitis, for tendency to puriform formations, for tympanitis, and other grave symptoms, we must be constantly on the watch from the first moment. In one or other of its forms it is the most frequent form in which death occurs. The patient is in danger the moment the pulse rises to 120, together with elevation of temperature to 101° or over that, though the degree of danger varies according to other circumstances. The condition of the pulse and temperature

taken together offer more trustworthy indications as to the patient's state.

The elevation of temperature is now always most carefully watched and cared for. In several cases where the temperature was very high it has been reduced by the application of the ice cap to the head, and three or four years ago great attention was paid to this procedure, and a special apparatus devised consisting of a spiral tube in the shape of a cap, through which iced water was made to flow continuously (Thornton). Another method adopted was to cover the patient with a sheet wetted with iced water. It appears, however, that of late there has been less necessity for the ice cap, owing to the greater success in preventing septicæmia.

Warmth to the abdomen, poultices, turpentine stupes, etc., are requisite when any local pain or irritation is present. When, however, there is decided elevation of temperature, it is so frequently found that it is due to a septic process in the peritoneal cavity that search is made, by vaginal examination or otherwise, for evidence of existence of puriform swellings or collections, and several lives have been saved by opening or allowing the escape of the contents of such collections.

Careful administration of diffusible stimulants, ether, champagne, together with injections of natural character, are required when strength is failing from septicæmia or otherwise.

Tympanitis—generally coexistent with peritonitis—is a troublesome complication. A long O'Byrne's rectal tube is useful under these circumstances. A case is recorded where the best effects resulted from inverting the patient to relieve great tympanitis.

Diarrhœa is dangerous: it must be checked by using first a warm-water injection to empty the rectum, and then giving by injection laudanum, in small frequent doses, along with the brandy and water probably also required.

Life frequently hangs on a thread in the few days following ovariotomy, but experience has shown that very apparently hopeless cases recover by careful nursing, assiduous feeding as above directed, and unhesitating administration of champagne or other stimulants in very frequent small doses.

For some days the patient must lie absolutely on the back. Bed-sores must be prevented by use of water cush-

ions; the greatest cleanliness, but especially dryness, of the linen and surface of the body enforced.

Exploratory Operations.—Of late years the operation of opening the abdomen in order to ascertain whether it is possible to perform a further operation has come to be recognized as a proper procedure in certain cases. It is remarkable that so little harm seems to be done by this operation when accompanied by antiseptic precautions.

Ovariotomy during Pregnancy.—The operation has of late years been performed during pregnancy in some few cases. Mr. Spencer Wells in 1877 * reported nine cases with eight recoveries, and in five the child was born at natural term. There were three operations in the third month, three in the fourth, one in the sixth, and two in the seventh month. Dr. Playfair has collected thirteen cases of results of ovarian disease and pregnancy, and of the thirteen as many as seven were fatal at the end of pregnancy. Dr. Galabin † reports a case of ovariotomy in the sixth month, with favorable result and delivery at full time. He says that in most, if not in all, cases reported of operation after the fourth or fifth month premature labor followed sooner or later. Mr. Wells prefers to operate early rather than late in pregnancy. It does not seem possible to lay down an exact law as to operating during pregnancy. But it is manifest that if the patient be in a suffering condition ovariotomy is called for, even though at the risk of inducing premature labor later on. The probability is that the decision will be more and more in favor of operating.

Palliative Treatment of Ovarian Tumors.—Past experience does not give encouragement for the belief that much benefit is derived in cases of *ovarian dropsy* from any particular remedies. Iodine, bromine, and their compounds, are agents which have been most often exhibited of late years. Iodine has been applied externally also. It has not been shown that any great amount of benefit has been derived from their use, but in the early stage of the affection it would be desirable to give them a trial. It is extremely doubtful whether we have any one drug from which much can be expected; but it does seem reasonable to suppose, and it is in accordance with experience, that by attending to the general health of the patient, enforcing observance

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* *Obst. Soc. of London*, July, 1877.
† *Brit. Med. Journ.*, March 13, 1880.

of rules as regards diet, exercise, and regimen generally, a favorable influence may be exerted, and possibly the onward progress of the case stayed; the more so if we found, on inquiry, that the general health had been, for some time previous to the appearance of the disease, in a defective state. Whether operative measures be adopted ultimately or not, we should in the meanwhile inquire minutely into the particulars of the life of the patient, her habits, food, etc. Such remedies should be administered as will assist in restoring the impaired health. Iron, quinine, or other suitable tonics, will frequently be required. The condition of the bowels must be regulated, and mild laxatives administered if necessary; injections are often required in cases where there is a pelvic ovarian tumor, the tumor sometimes pressing on the rectum and preventing defæcation. In cases where the disease is far advanced, where operative measures are, from whatever cause, inadmissible, the palliative treatment must be adapted to the circumstances of the case. The great difficulty is generally to carry on the digestive process, there being often great irritability of the stomach and inability to take food. The food administered must be of the most nutritious and easily digestible kind.

CHAPTER L.

Diseases of the Perineum and Vulva.

Examination of the External Generative Organs.—Diagnosis of Ulcerations of the Vulva of Various Kinds—Adhesions of Labia; Treatment—Elephantiasis of Vulva—Hypertrophy of Labia and Nymphæ—Anasarca of Labia or Nymphæ—Hypertrophy of the Clitoris—Condylomata, Warty Excrescences of the Vulva; Removal—Lupus of the Vulva—Cancer of External Generative Organs; Treatment—Abscess of Labia and Boils—Blood-tumor of the Vulva—Fibrous, Fatty, and Encysted Tumors of the Vulva; Treatment—Hernia of the Labia and Ovary—Various Forms of Inflammation of the Vulva; Treatment—Vulvitis in Children—Pruritus of the Vulva; Treatment.

Method of Examination.—For ordinary purposes the position on the side answers very well; in others, the position on the back is best.

DIAGNOSIS OF ULCERATIONS OF THE EXTERNAL GENITALS.

In reference to the diagnosis between ulcerations of syphilitic, cancerous, lupoid, or other nature, it may be remarked, *in limine*, that it is safer in doubtful cases to depend rather on the deductions to be drawn from attentive consideration of the history and general symptoms of the patient, than on the appearances presented by the ulcerated surface itself, these appearances, *per se*, being likely to lead to the formation of erroneous conclusions.

Ulcerations due to *syphilis* are distinguished from those due to *lupus* by the following characters: In syphilis, although the ulcers may be like those of lupus superficially, there is an absence of induration of the cellular tissue beneath. The coppery hue of syphillis is wanting in lupus. The history and course of the two affections, the absence of syphilitic affections in other parts of the body, in cases where the disease of the vulva has lasted for some time, would be against syphilis. Syphilitic ulcers have a predilection for the internal or mucous surface of the vulva, and especially the labia minora. In the case of lupus of more severe form, where there is a considerable destruction of the tissues of the part, there might be a possibility of confounding it with the phagedænic form of syphilis. Here the distinction would rest on the rapid course of the syphilitic, the chronic course of the lupoid, disease; added to which the previous history of the case would throw much light on the subject.

Ulcerations due to *cancerous* disease of the vulva have the characters ordinarily possessed by cancerous ulcers elsewhere. The hard, jagged, everted borders, the hardening of the tissue beneath, greater than in the case of lupus, the occasional bleeding, lancinating pain, and progressive character of the disease—these are the chief distinctive features. There is less disturbance constitutionally in the case of cancer of the vulva than in cancer of other parts, inasmuch as cancer of the vulva is usually of the epithelial variety. Syphilitic ulceration, as a rule, could hardly be confounded with cancerous; the course of the affections is essentially different; the cancerous disease is limited to one spot, and there is, as in the case of lupus, absence of syphilitic disease in other parts of the body. The diagnosis of syphilitic ulcer is not always so easy. Dr. West has observed some cases of chronic ulceration of the mucous surface of the

vulva, which he believes to have been forms of tertiary syphilis, but which proved so difficult to cure as to raise the question as to their malignant nature.* The ulcers in question were on the mucous surface of the vulva, for which they exhibited a preference. In lupus, there is more induration around and in the base of the ulcer, and the orifice is often contracted; whereas, in Dr. West's cases of supposed syphilitic origin these characters were wanting.

Simple ulcerations are usually distinguished from syphilitic ones by the absence of inflammation around the ulcers in the syphilitic cases.

Twice I have observed a patch of ulceration, the size of a shilling, on the surface of the labia, in a young woman the subject of scrofula. This form of ulceration might be termed *scrofulous ulcer of the labium.* The edges were pretty well defined, there was little inflammation around, and not much pain. On both occasions the ulcer appeared simultaneously with great constitutional disturbance, and disappeared when, after removal to the country, the patient had become in other respects better.

ADHESION OF THE LABIA MAJORA.

The labia majora are sometimes found adherent in the middle line, there being only a small opening above—the urethral orifice. Cases of this kind are chiefly met with in infants or young children.

Such adhesion is sometimes met with, but in a partial degree only, after adult age has been reached. The closure here alluded to is very different from that situated higher up within the vagina, where the hymen is in question; in the latter case, the obstructive membrane is not visible until the labia have been separated. Here the labial obstruction is quite on the surface, the perineal raphé extending forward much further than usual, and all that is seen of the vagina is a little recess just beneath the urethral aperture.

The *treatment* required is as follows: The ivory handle of a scalpel is dipped in oil, the extremity of the handle inserted just below the urethral orifice, and the separation effected by pressing the edge of the handle outward against the obstruction, which usually readily gives way. A piece

* "On Diseases of Women," p. 651.

of oiled lint may be introduced between the separated labia, and there left for a day or two. This operation should be performed during the first year of life. Incision may possibly be necessary in those rare instances in which the agglutination persists until after puberty.

ELEPHANTIASIS OF THE VULVA

is a peculiar hypertrophy of the skin of the part. The disease is very rare; the size of the tumor thus formed may be very considerable, as in the case depicted in the French edition of Scanzoni's work on "Diseases of Women," where the labia, enormously increased in size, extended down as far as the knees. The disease is said to be epidemic in Barbadoes. It is not often witnessed in temperate zones. (Scanzoni.)

HYPERTROPHY OF THE LABIA AND NYMPHÆ

is not so rarely witnessed. The increase in size is generally due, when the labia majora are affected, to large quantities of fat. Whether due to fat or to fibro-cellular tissue, the enlargement is smooth and uniform, thus differing from elephantiasis and from other forms of enlargement of the labia. The hypertrophy may affect the labia majora or the labia minora exclusively. A remarkable case of hypertrophy of the nymphæ has been described by Breslau, in which the tumor and the dragging of the enlarged organs on the lips of the urethral orifice produced incontinence of urine.

In a few cases when the bulk of the organ interferes with locomotion, or gives rise to other discomforts, the hypertrophied parts should be excised.

ANASARCA OF THE LABIA MAJORA OR NYMPHÆ.

In these cases there is an effusion of fluid into the cellular tissue of the labia majora, or nymphæ, or both, and it usually affects both sides; the distension is uniform, not painful; it is consequent on obstruction to the abdominal circulation, as in the course of pregnancy, general organic disease of the heart, liver, kidneys, etc.

The distinguishing characteristics of the swelling due to this cause are that the swelling is uniform, smooth, pitting on pressure, and painless, at all events at first. Subse-

quently there is often much pain, due to excoriation of the surface.

The *treatment* consists in observance of rest in the horizontal position, and emollient applications, such as poppy fomentations, or an evaporating lotion, composed of a mixture of spirit and water. Such applications afford great relief, and are usually sufficient. When the swelling is extreme, troublesome excoriations, produced by the opposed surfaces rubbing one against the other, may be witnessed. In such cases, lint dipped in the lotion must be applied between the parts affected, so as to prevent friction.

HYPERTROPHY OF THE CLITORIS

is now and then met with as a consequence of eczema of the skin in the neighborhood, or of a chronic inflammatory condition of the surrounding parts, or of syphilis, or without evident cause. It is occasionally congenital. The clitoris is also liable to become the seat of cancerous growth.

Cases are on record in which the clitoris has attained an enormous size, so much so as to render walking and moving about inconvenient. The identity of the tumor with the clitoris will be ascertained by carefully examining its attachment superiorly.*

In cases of self-abuse the clitoris may become, but not necessarily so, hardened and hypertrophied.

Treatment.—When the clitoris is hypertrophied, its removal may be necessary, on account of the mechanical inconvenience it produces. The removal of the clitoris for the purpose of curing self-abuse has not proved satisfactory in cases where it has been practiced.

CONDYLOMATA, WARTY EXCRESCENCES, ETC.

Various forms of excrescences of the external generative organs are noticed. *Condylomata* are warty growths, often of considerable size—flat, smooth elevations, growing irregularly round the orifice of the vulva, and occasionally in such profusion as to almost block up the entrance. They are observed in cases of syphilis of the female gener-

* Several cases of enlargement of the clitoris will be found described in Dr. Churchill's valuable treatise on "Diseases of Women."

ative organs. There is generally in such cases a profuse offensive discharge; and, on inquiry, the syphilitic source of the growths in question is made evident. Warts of non-syphilitic character, and resembling those seen in other parts of the body, may be found growing on some part of the vulvar surface. The diagnosis of the syphilitic from the non-syphilitic cases is not usually a matter of any difficulty. The further consideration of this subject falls scarcely within the province of this work.

Treatment.—Where the condylomata are large and numerous, the preferable treatment is to use the knife for their removal, the patient being previously placed under the influence of an anæsthetic. Strong nitric acid or lunar caustic may be used in other cases. [Chromic acid is an excellent application.] The black wash, or a strong solution of iodide of potassium, should be subsequently applied freely; anti-syphilitic remedies are to be given internally. The smaller warts may be cut off with scissors.

LUPUS OF THE VULVA.

The chief characteristics of this disease—not a very common one—are, thinning of the skin, hypertrophy and knotty condition of the cellular tissue beneath, formation of indurations and enlargements, ulcerations and contractions. The disease is chronic, and is not usually painful. The ulcers form slowly, and the surface heals in one place while it is ulcerating in another. The contractions left on healing of the ulcers are very considerable. The disease differs from cancer, but exhibits a very close resemblance to lupus of the face. It may prove fatal by exhaustion, or by peritonitis consequent on formation of fistulæ. The disease was first accurately described by Huguier, who divides the cases of this disease into three categories—the superficial, the perforating, and the hypertrophic forms.* Dr. West, whose description of lupus is most complete, has himself observed five cases.†

The disease was observed in only one of these cases before the age of twenty; it was observed most frequently between the ages of twenty and thirty-five. Its duration may be

* Huguier's important memoir will be found in the *Mémoires de l'Acad. de Méd.*, 1849.

† *Op. cit.*, p. 653.

gathered from Dr. West's statement, that in the fourteen cases observed by Huguier and himself, some cases admitted of a cure after more than three years, and of great relief even after eight years. One case had lasted between ten and eleven years. The disease kills, when fatal, by producing peritonitis, fistulæ, contraction of the bowel, and not, as cancer does, by attacking some distant organ, or by involving all the tissues in one common morbid change. (West.) Two cases of this rare affection are recorded and delineated in Dr. M'Clintock's work.

Treatment.—It appears that complete recovery from lupus of the vulva is rare, though the disease is susceptible of much alleviation by treatment. Long courses of small doses of mercury and iodide of potassium would seem, from Dr. West's experience, to be most efficacious. Scanzoni recommends the local and internal use of iodine. Huguier and West both insist on the extreme advisability of removing the nymphæ or any of the adjacent parts readily admitting of extirpation, when the ulcerations upon them appear indisposed to heal. Dr. West also urges the removal of the excrescence apt to form in such cases as preparatory to other measures; and he considers the actual cautery preferable to any kind of chemical escharotic, as a means of healing the ulcerations produced by the disease. Professor E. Martin* of Berlin records a case in which he applied fuming nitric acid to the affected parts, the patient being under the influence of chloroform, and subsequently a milder caustic, in the shape of nitrate of silver. The case, that of a patient æt. 25, terminated satisfactorily. The destruction of the surface effected by means of potassa fusa, as successfully practiced by Professor Humphry in cases of lupus of the face, would be applicable in cases of this disease.

CANCER OF THE EXTERNAL GENERATIVE ORGANS

usually occurs in the form of epithelial cancer, scirrhus and the medullary form of the disease being much more rare. Any part of the external generative organs may be the starting-point of the affection—the clitoris, the labia, are more commonly first affected. In its first stage epithelial cancer exhibits itself as a "little hard tubercle on the outer surface, but near the edge, of the labium." (West.) The

* *Mon. f. Geb.*, Nov., 1861., p. 348.

tubercle in question is not usually painful, but gives rise to itching and smarting. The diagnosis of the indurations due to commencing cancer of the labia is often a little obscure at first. In a case which fell under my notice, the occasional peculiar sharp pain darting across the groin led me to suspect cancer; the result proved this suspicion to be well founded. After some months' duration the surface becomes ulcerated, and the ulceration then spreads. The edges of cancerous ulcers are indurated, and this induration is perhaps the most distinctive feature of the ulcer; there is occasionally a bloody discharge; subsequently the inguinal glands swell, and the patient's constitution becomes affected in the characteristic manner. The disease may begin in the groin, as in a case of Dr. M'Clintock's, and travel to the generative organs.

Mr. Jonathan Hutchinson has collected the particulars of fourteen cases of epithelial cancer of the female genitals.* The labium was the part affected, also the clitoris and nymphæ in one or two cases. The longest time the disease had existed was five years. It returned after operation in three of the cases. Operation is said to have been finally followed by recovery in the other cases, save one, where the result is not given.

Treatment.—When, as is ordinarily the case, the disease belongs to the epithelial variety, early excision should be practiced, the position and relations of the tumor being such as to render the removal practicable. When the disease has so far advanced that deep ulcerations are present, such operations are not admissible. Applications, such as bromine in solution, are then more suitable.

ABSCESS OF THE LABIA; BOILS.

Abscess of the vulva is characterized by a rounded circumscribed swelling, of variable size, on one side only, usually on the inner aspect of the labium, and which is painful and very tender to the touch. It may be produced by blows or injury of any kind, by excess in coitus, by scratching, as in cases of pruritus, by masturbation, etc. The most frequent *seat* of the affection is the gland situated on either side, known as the vulvo-vaginal or Duvernoy's gland. This gland becomes inflamed, or the orifice of its

* *Med. Times and Gaz.*, Oct., 1860, p. 379.

duct becomes obstructed, and the abscess is thus produced. Most cases of circumscribed abscess of the labia originate in the gland in question. Abscess of the vulva of a more diffuse form may be observed as the result of puerperal affections, or it may occur in connection with œdema during pregnancy, or under other circumstances.

Boils are liable to form in the labia as well as other parts of the body. They occasion much irritation, and inconveniences of various kinds. When one boil is in process of healing, another often forms, and the affection may thus last a considerable time.

Treatment.—The ordinary circumscribed abscess of the labium which arises out of inflammation, or obstruction of the duct of the gland here situated, is best treated by early incision. After the opening has been made into it (which should never be done until the question of the swelling being possibly due to a hernia has been considered and dismissed), warm poultices should be applied, and perfect rest enjoined; opiates are necessary to relieve the pain.

Boils are often tiresome and troublesome to manage. Great cleanliness is essential, and generally tonic medicines are requisite. The solid nitrate of silver has been found a good application.

BLOOD-TUMOR OF THE VULVA.

This is not by any means a common affection. The tumor, composed of blood effused into the tissue of the part, and doubtless derived from the vessels of the erectile structure described as the bulb of the vestibule by Kobelt, is generally confined to one side. The tumor may be of considerable size; it is painless, unless when the effusion is considerable and the surface inflamed. Women are most liable to this "thrombus" of the vulva, as it is termed, during pregnancy, and the swelling has been sometimes so great as to impede delivery. After parturition, also, effusions are frequently found to have taken place into the cellular tissue in this situation. It sometimes happens that the tumor or the enlarged veins near it burst externally, and serious hæmorrhage results.

Dr. M'Clintock* describes the affection under the term "Pudendal hæmatocele." This author, who has placed on

* "Clinical Memoirs on Diseases of Women." Dublin, 1863.

record some most interesting cases of this affection, believes that a varicose state of the vessels of the vagina or vulva is not, as usually supposed, a precursor of the rupture which permits the effusion of blood: for out of 38 cases, tabulated for him by Dr. Halahan, there were only two in which such varicose condition of the veins was noted. The affection was observed in primiparæ in 13 out of 25 cases where the number of the pregnancy was noted. Dr. M'Clintock has never observed a case of thrombus of the vulva in the non-gravid state, except as a result of direct violence; and even during pregnancy its spontaneous occurrence is very rare, the more usual cause of the affection being a traumatic one. Mauriceau mentions a case in which a blood tumor in the left labium had existed for twenty-five years, and which, on being opened, gave issue to matter like the contents of an aneurismal sac.* This was, however, a very exceptional case; ordinarily, the thrombus of the vulva is a recent affection, of rather sudden formation, and in the majority of cases it is an accident attendant on labor.

Treatment.—These tumors are best treated by rest, and the continued use of an evaporating lotion. They are not to be meddled with surgically, unless the coagulum—which is rare—undergoes liquefaction, and a sort of abscess results; in which case puncture may be required.

The hæmorrhage which is liable to occur from bursting of these tumors is to be treated by very careful and continuous application of pressure combined with cold: it has occasionally proved fatal.

FIBROUS TUMORS OF THE VULVA; FATTY AND FIBRO-CELLULAR GROWTHS; ENCYSTED TUMORS.

Fibrous growths are not very frequently met with in the external genitals. They are characterized by slow formation, are painless and circumscribed; they may become pendulous, attached by a long pedicle. There is a peculiar form of fibrous tumor—the *recurrent*—of which an interesting instance is recorded by G. Simon.† In this case, after repeated removals, the disease always returned, and finally proved fatal. To the ordinary forms of fibrous tumor there attaches no such tendency to reappear.

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* "Mal. des Femmes," tom. ii., p. 29.
† Schmidt's "Jahrb.," vol. cv., p. 63.

Fatty and Fibro-cellular Tumors of the Vulva.—Dr. Churchill * relates cases in which tumors answering this description have been present. Sir Henry Thompson has related an instance in which a firm lobulated tumor, weighing when removed nearly four pounds, grew from the external generative organs, hanging down to within two inches of the knees. Its surface was fissured and nodulated, and it was made up of hypertrophied cellular tissue, with fat in the interstices. It had been growing for nine years. The patient's age was 46. The tumor was chiefly inconvenient from its size.†

The *encysted tumor* of the vulva is rare. It grows to the size of an egg or less, and is found just within the vulvar aperture on one side. I have seen two instances of it.

Capelle records the case of a woman, æt. 30, who had an enormous enlargement, termed by him a *lipomatous tumor*, the size of the head of an adult, originating in the right labium, and extending as far as the knee. It was removed by the knife ‡ The growth of the tumor dated from ten years previously.

Oozing Tumor of Labia.—A solid œdematous condition of the labia, with great secretion from the muciparous follicles, is sometimes met with. It is generally confined to one side; the enlargement is smooth, but firm; the surface is somewhat lobulated; and there is a profuse watery secretion. This condition was first described by Sir C. M. Clarke.

TREATMENT OF TUMORS OF THE LABIA.

The various forms of tumor of the labia are usually only to be treated by one method, viz., excision. The risk attendant on this operation is not usually considerable, but when the tumor is very large, or attached by a broad base, the hæmorrhage may be difficult to restrain, and it may be necessary to secure the vessels one by one as the operation is being performed; in some cases it is advisable to transfix the pedicle thrice or more, in order to secure control over the hæmorrhage preparatory to commencing the incision.

The *encysted tumor of the vulva* is best treated by dissect-

* "On Diseases of Women," 4th ed.
† "Trans. of the Path. Soc.," vol. vi., p. 269.
‡ *Journ. de Méd. de Bruxelles*, Jan., 1860, p. 41.

ing it completely out; if preferred, it may be simply punctured, but the cyst is then liable to refill.

In cases of oozing tumor of the labia, extirpation of the labium has been performed. Our present knowledge of the disease is somewhat vague and unsatisfactory; few opportunities are afforded for observing it, or for ascertaining whether it be a peculiar disease, or a modified form of the affection known as eczema of the vulva. Dr. Churchill recommends great attention to the state of the general health in such cases, and administration of a good generous diet. Rest, the use of astringent applications, as starch, decoctions of oak bark, or lotions, constitute the palliative treatment.

HERNIA OF THE LABIA.

An enlargement situated at the upper part of the labia on one side may be due to a hernia in this position. The hernia follows in such case the course of the round ligament. It is characterized by the position, which is in the course of the ligament in question, by its painlessness (unless inflamed), and by the impulse communicated on coughing.

HERNIA OF THE OVARY.

In some very rare cases, a tumor is observed at the upper part of the labium on one side (in the celebrated case related by Mr. Pott, on both sides), and constituted by the ovary, a pouch of the peritoneum in such cases being prolonged into the situation in question. Dr. Meadows has recorded a very interesting case,* in which there appears to have been primarily an ordinary irreducible inguinal hernia, but secondarily an ovarian hernia. The tumor in this case gave rise to so much inconvenience that it was removed by a surgical operation.

VARIOUS FORMS OF INFLAMMATION OF THE VULVA.

Vulvitis.—Acute inflammation of the vulva may be produced by blows, by undue exertion in walking, by intemperate sexual intercourse, by masturbation, by gonorrhœal

* "Obst. Trans.," vol. iii.

infection, by syphilis; and it may occur in conjunction with affections of the vulva or vagina of a chronic character, such as lupus, follicular inflammation, cancer, etc. Erysipelatous inflammation is found to occur here, as on other parts of the surface. Abscess of the vulva, in which a circumscribed enlargement of one part of the vulva only is present, is not included in the present series of cases, though vulvitis may lead to abscess.

The inflammation of the vulva produced by any of the foregoing causes may be more or less intense in degree, and the appearances observed will vary according to the time at which the observation is made. Swelling of the labia, pain on movement of any kind, tenderness, pain in micturition, redness of the mucous membrane, with more or less irritative fever,—these are usually present at the commencement of the disease. A discharge more or less copious, and generally of a purulent or muco-purulent character, is found issuing from between the labia; the skin at the upper and inner parts of the thighs is excoriated. The swelling may be very considerable. If the case be not seen until a later period, the swelling may have subsided; but the tenderness, together with a constant discharge, and a troublesome irritation and excoriation of all the mucous surface, are usually still found to be present.

In some cases we find the mucous surface of the vulva covered by diphtheritic patches of exudation, there being at the same time a sub-acute inflammatory condition of the vulva generally. The patient is, under such circumstances, weak and prostrated, and these cases may occur epidemically.

An aphthous form of inflammation may attack the vulva —an affection more especially observed, however, in children.

With vulvitis may be conjoined inflammation of, or discharge from the vaginal canal higher up; and in fact chronic vulvitis is usually associated with vaginitis. But the inflammation is very frequently almost entirely limited to the surfaces of the vulva; and hence the necessity for considering such cases apart.

Chronic Inflammatory Affections of the Vulva.—In *eczema* of the vulva, we find redness of the skin of the folds between the labia and the thighs and their neighborhood, producing very constant and troublesome itching. Undue walking exercise is sometimes sufficient to produce this

affection in a mild form. There is, however, a more chronic and obstinate form of the affection not uncommon. When the disease has become thus chronic, the skin is often found thickened, hypertrophied, and the hairs have in great part disappeared. *Prurigo* of the external genitals is not common; pruritus, where noticed, being due to other conditions of the parts.

Vulvar folliculitis, a condition for our knowledge of which we are indebted to Dr. Oldham and Dr. Huguier of Paris, is constituted by the presence of little rounded prominences irregularly scattered over the surface of the vulva. These prominences are painful and irritable, and after a time break and discharge a little puriform fluid; and the surface of the vulva generally becomes inflamed and red, and in places ulcerated. The inflammation is seated in the mucous follicles of the surface. This condition is met with more especially in pregnant women and during the heat of summer, and appears to be caused by want of cleanliness, by excessive indulgence in sexual intercourse, etc. The sphincter of the vagina is frequently, according to Dr. Oldham, contracted; and a painful hyperæsthetic condition of the vulvar orifice is sometimes associated with this follicular inflammation. The little ulcerated surfaces left after the escape of the pus are distinguished from ulcers due to syphilis by the fact that in syphilis the ulceration is more generally on the inner surface of the labia minora, by the larger surface of the ulcer, and by the peculiar history of its appearance; whereas, in vulvar folliculitis, the whole vulva is more or less affected, the surface ulcerated is very small, and not inclined to spread.

The affection is a very painful one; the patient finds a difficulty in sitting comfortably; pain on intercourse, troublesome pruritus, occasional bleeding from the surface, slight discharge—these symptoms are, one or more of them, generally observed.

TREATMENT OF INFLAMMATORY AFFECTIONS OF VULVA.

Rest, frequent ablutions, and attention to the general health, are of great importance, more especially in chronic cases.

In the treatment of cases of eczema of the vulva, in addition to rest, ablutions, etc., the use of lotions of glycerine or of solution of carbonate of soda will be found efficacious;

when the disease is chronic, caustics are often the only effectual remedies.

In cases of follicular inflammation of the vulva the use of a weak lead lotion, rest, and attention to the general health, will do much to remove the disease. Dr. Oldham's favorite remedy is an ointment containing hydrocyanic acid (2 drachms), diacetate of lead (a scruple), and cocoa-nut oil (2 ounces), the parts being bathed with cool water before applying the ointment. In some cases of this affection which have come under my own notice, I have used nitrate of silver, in the form of a strong solution, with satisfactory results.

VULVITIS, AND DISCHARGES FROM THE GENITALS, IN CHILDREN.

These cases require to be considered apart. A good deal of misconception, and consequent injustice to individuals, have arisen in connection with this subject, and it is only now beginning to be extensively recognized as a fact that vaginal discharges from the generative passages in young children may occur quite independently of contagion.

The discharges from the genitals observed in children have, for the most part, their origin in the glands just within the vulva, the vaginal canal within the hymen being generally unaffected.

The following are the chief causes of vulvitis in children: 1. These discharges are often witnessed in children of scrofulous or debilitated constitutions. 2. They may frequently be traced to ascarides in the rectum, directly or indirectly producing such an amount of irritation as to cause leucorrhœa. 3. Simple want of attention to cleanliness may be the only assignable cause. 4. A form of leucorrhœa is sometimes prevalent in children simultaneously with diphtheritic affections of other mucous passages. 5. Gonorrhœa communicated by the male. 6. The irritation of dentition. The fact that the child is weakly, or showing other signs of a constitutional tendency to scrofula, would lead us to connect a vaginal discharge therewith. If the leucorrhœa proceed from vermicular irritation, there is generally extreme irritability and itching in the neighborhood of the rectal orifice, and other well-known signs of these parasites are observed. A circum-

stance which I have noticed more than once in connection with ascarides in the rectum, is the objection children affected with them have to sitting on soft cushions; anything hard or angular is preferred.

Cases of rape on children sometimes result in the production of discharge of a gonorrhœal nature. The moral evidence is, in the case of very young children, often open to great suspicion; the medical evidence must be given with great circumspection, for it is in the case of very young children that discharges from other causes are, as has just been pointed out, by no means unfrequently observed.

In cases where "violation" is suspected, the condition of the vaginal outlet is an important subject for consideration. A complete discussion of this interesting subject cannot be entered into here. The chief points to which attention should be directed, however, are the following: In *children* examined soon after violation has been effected, there are marks of violence on the external genitals, which may be bruised and lacerated, the laceration generally affecting the perineum, and together with this the hymen is found torn. These are the more usual results observed. A *discharge* from the genitals of a child, which the lower classes are often disposed to attribute to the effects of intercourse, is by itself worth nothing as a sign of violation. The evidence of injury to the perineum, and of laceration of the perineum, is much more to be relied on than the mere discharge. For further information the reader is referred to the standard works on "Medical Jurisprudence." In children the signs of violation persist for a much longer period than in adults, and, in the case of the former, signs may still be present from eight to fourteen days after the occurrence. In adults the marks of violence observable are often very trifling, especially in the case of married women, and, unless extreme in degree, these evidences disappear very rapidly. In cases of suspected violation, both in adults and children, the microscope might be very usefully employed in rendering the diagnosis more certain. Spermatozoa can be recognized for a very considerable time after being deposited in the vagina, and, under favorable circumstances, they may be found in the mucus of the upper part of the vagina as late as twenty-four or thirty-six hours after intercourse.

PRURITUS OF THE VULVA.

The terms "pruritus vulvæ," "pruritus of the vagina," etc., have been used to designate a class of symptoms referable to the generative organs, in themselves very distinctive and characteristic, and which are also exceedingly troublesome and inconvenient to the patient.

Varying exceedingly in form and degree, the essential characteristic of the class of symptoms now to be considered is an itching sensation, impelling the patient to relieve herself by rubbing or scratching the part affected. The sensation is now and then a kind of formication only—a creeping uncomfortable feeling on the surface of the external generative organs. More commonly, however, the sensations complained of are more intense in degree and somewhat different in kind. The irritation was accurately described by Dr. Rigby as "like that of urticaria—viz., a sensation of intolerable pricking and tingling, combined with burning heat and intense itching."* It is worse at some times than at others; it is often quite intolerable. Scratching affords hardly a temporary relief, and shortly gives rise to further inconveniences. Combined with the itching there is more or less constantly a feeling of heat in the parts affected quite as distressing as the other sensation.

Even in the worst cases there are usually remissions, during which the patient is more free from discomfort; and, as a general rule, at certain times of the day, or under certain peculiar circumstances, the sensation is experienced much more intensely; the affection is, indeed, more or less paroxysmal. Warmth particularly is liable to bring on a paroxysm; the heat of the bed is especially unbearable, the patient being obliged to leave her bed almost every quarter of an hour to obtain relief. After eating or drinking, too, the distress is usually greater. The congestion of the genital organs, associated with approach of the menstrual period, aggravates the affection.

The actual *seat* of the sensation is open to some variation. In most cases the irritation is not confined to one spot, but is felt equally over the pudendum, over the labia, and, in fact, all round the vaginal aperture. In some cases the nymphæ, the surface of the clitoris, and the adjacent surface of the vaginal canal, especially the anterior commissure

* "On Diseases of Women," p. 247.

above the clitoris, are the parts more particularly affected. Lastly, there are a certain number of cases in which the sensation has its seat, not at the external generative organs, but more internally.

The affection may be observed in women of all ages. It is perhaps most frequently observed at the climacteric period, when the menses are about to cease, although it is by no means limited to this period. It is more often observed in women advanced in life than in young women. The unmarried and married are almost equally liable to it.

The duration of the affection varies. Women sometimes remain subject to it for several months, or even longer. The pruritus is in many instances so persistent that the patient becomes worn out, exhausted, and prostrated in the extreme, owing to want of rest, annoyance, and pain so long continued. The necessity of applying the fingers to obtain a slight temporary relief by scratching occasionally excludes her from society. Altogether, a bad attack of pruritus is about as troublesome and inconvenient an affection as any to which a woman can be subject.

The nature and causes of the affection vary very much in different cases. Most cases are of a mixed character. Scanzoni regards the affection as hyperæsthesia of the sensitive nerves of the vagina, in some cases idiopathic, in others secondary, and in the latter depending on various affections of the ovaries, vagina, uterus, etc.; and the various alterations of the external generative organs witnessed in conjunction with it, are considered by this author secondary in their nature.

I have met with some very marked cases where the pruritus was most unquestionably due to acute anteflexion of the uterus, the disorder disappearing instantly the position and shape of the uterus were altered. Scanzoni also places flexions among the list of causes of pruritus.

Any circumstance favoring *congestion of the generative organs* may give rise to it. Thus, in the earlier months of *pregnancy* it is not rarely observed. Where a sluggish, inactive condition of the abdominal viscera is associated with digestive derangements, as in individuals taking but little active exercise and living well, there exists a liability to the affection; in cases of the latter description, hæmorrhoids are frequently present, and constipation is very generally observed. It is in cases coming under this category that the pruritus is found most often associated with a good deal of hyperæmia

of the external generative organs; and in this class of cases also, the scratching and rubbing most frequently have the effect of producing inflammatory changes of the vulva and parts adjacent.

Chronic diseases of the uterus are frequently connected with pruritus of the genital organs; in *carcinomatous* disease of the uterus, the affection in question is certainly very frequently witnessed. Possibly the frequent association of uterine cancer and pruritus is connected with the acrid character of the fluid discharges then passing over the vulva. Cases in which it was due to *superficial granular erosion of the os uteri* are mentioned by Drs. West and Churchill.

Radical disorder of the general health, quite independent of disease of the generative organs, has been found to be the cause of pruritus in some cases. Thus Dr. West alludes to an instance in which a young lady suffered severely from pruritus, which turned out to be due to diabetes.

An *acrid condition of the secretions of the sebaceous glands of the vulva* appears to be sometimes the cause of the pruritus. *Ascarides* in the rectum have been known to produce it.

In individuals of uncleanly habits, pruritus of the vulva is sometimes produced by *pediculi*.

An *aphthous* form of inflammation of the vulva was first alluded to by Dr. Dewees as now and then giving rise to pruritus of the vulva; the inner surface of the vulvar commissure being covered with little aphthous patches, and more or less congestion of the parts generally being conjoined. How far this condition is primary or secondary cannot be determined.

Inflammation of the mucous follicles of the vulva—*vulvar folliculitis* (Oldham)—is a disease of the vulva in which troublesome pruritus may be present.

In a case which came under my own notice, very intense and obstinate pruritus was found to be dependent on *warty growths from the under or vaginal surface of the urethra*, the whole forming a tumor the size of a walnut. In this case the removal of these growths was necessary, and a cure soon afterward resulted. The *vascular tumor of the urethra*, which, as is well known, grows within or at the urethral orifice, gives rise to great disturbance to the function of micturition; less frequently, it is a cause of pruritus.

Lastly, it may be stated generally that there are few alterations in the mucous surface at or near the vaginal aperture which may not be associated with pruritus.

Treatment.—The *general* treatment of pruritus of the vulva consists in correcting whatever may be found wrong or prejudicial to health in the habits, mode of life, diet, and regimen of the patient. The digestive organs should be duly watched, constipation prevented. The food given must be light and simple. In that form of the affection observed in women past the climacteric age, when there is debility, defective digestion, and want of appetite, without any, or, at all events, any considerable, alteration of the skin covering the pudendum, mineral acids combined with bitter infusions are of the greatest service. Small alterative doses of blue pill are occasionally useful.

The *local* treatment consists in the removal of any condition which may be associated with the pruritus, whether it be the cause or the effect of the same. And this local treatment will be, according to the nature of the case, palliative or curative. It will necessarily vary according to the actual condition of the parts discovered on examination. Generally there is some abnormal condition of the surface of the labia and adjacent parts, which, as before remarked, may be primary or secondary as regards the pruritus. In some cases the local treatment is all that is necessary for the cure. Cleanliness is the first essential. The external genitals must be frequently and thoroughly washed with tepid or quite cold water. The hip-bath should be frequently used, for the application of water is almost always grateful to the patient. If there be much fulness of the blood-vessels of the vulva, leeches are sometimes necessary. A rather strong cauterization of the os uteri with solid nitrate of silver will sometimes succeed when other measures fail.

Respecting special topical remedies, Scanzoni speaks most highly of a mixture consisting of chloroform two parts, and almond oil thirty parts, to be applied to the surfaces of the labia and of the ostium vaginæ. I have found this remedy of the greatest service, but the quantity of chloroform is too small. One part of chloroform in six of oil is the proportion I have used. Dr. West finds goulard water and hydrocyanic acid a very valuable application. When aphthæ are present, borax in solution with a little morphia (borax ʒiv., morph. hydroch. gr. viij., rose-water ℥x.—West) has been found very efficacious. Dr. Rigby found an ointment composed of equal parts of ung. hyd. nit. ox. and cod-liver oil very successful when other measures

had failed. Alum and powdered sugar, sprinkled over a tampon of cotton and inserted in the vagina twice a day for a week, is a remedy used by Scanzoni. The latter author states that Scholz's remedy, the calladium sequinum, has in his hands given satisfactory results. Cauterization by means of nitrate of silver has been employed by several. For pediculi Churchill recommended turpentine, tobacco, or calomel in powder. [Mild mercurial ointment is almost a specific for pediculi.]

Rest, cooling lotions, etc., are sometimes required to subdue the inflammation consequent on the scratching.

CHAPTER LI.

Diseases of the Vagina.

Methods of Examination; Digital and Ocular Examination—Normal Condition of the Vaginal Canal.

Obstructions of the Vaginal Orifice and Vagina; their Diagnosis.—Diagnosis of suspected defective Development, or of entire Absence of the Uterus, Vagina, etc.—Double Vagina—Hardness or Resistance of the Vaginal Wall.

Tumors projecting at or beyond the Ostium Vaginæ.—Diagnosis.—Cystocele; Ascites with Prolapse of Vaginal Wall; Vaginal Cyst; Menstrual Retention—Vaginal Rectocele; Entero-vaginal Hernia—Tumors connected with the Uterus—Polypus of the Vagina.

Diseases of the Vagina.—Congenital Defects: Stricture of the Vagina—Extreme Narrowness—Various unusual Conditions of the Hymen—Menstrual Retention associated with Imperforate Hymen—Treatment of Defects and Occlusions of the Vagina.

Vaginitis; Treatment—Spasm and Hyperæsthesia of the Vulva; Treatment.

Fistulæ: Vesico-vaginal and Recto-vaginal Fistula; Treatment.

Tumors of Vaginal Walls; Treatment.

Methods of Examination.—The ordinary method of obtaining information as to the condition of the vagina is by the introduction of one or more fingers into the canal—*digital* examination. It is sometimes necessary to add to this an ocular examination of the canal, either with or without the aid of the speculum.

Digital examination of the vagina is effected in the following manner: The patient lying on the left side, the forefinger of the right hand, previously well oiled, is introduced

into the vagina. For the purpose of ascertaining the condition of the parts near the lower extremity of the canal, the introduction of one finger is sufficient; but it is generally necessary to introduce the second finger also, to examine the condition of the vagina higher up: in a few cases, the introduction of all the fingers is found necessary. In effecting this operation, the left hand should be placed on the right hip of the patient. This assists in giving a correct idea as to the position of the entrance of the vagina. The finger or fingers must be introduced slowly and with care.

The examination of the *canal of the vagina* is accomplished by the finger or fingers introduced as before described. Information is thus obtained as to the size, shape, and direction of the canal, as to the state of the lining membrane, its sensibility, smoothness or roughness, and its temperature. In certain cases, the eye may be also used, in order to ascertain the presence of undue redness or other changed conditions of the mucous membrane, and a more minute examination of the canal by means of the speculum is necessary where the presence of unnatural communications between the vagina and the bladder or rectum is suspected; also in some other cases.

Normal Condition of the Vaginal Canal.—With the patient lying on the left side, the distance from the upper extremity of the vagina to the situation of the hymen is, in round numbers, three inches, as a rule rather less. This distance measured off on the forefinger, extends from the point of the finger to the centre of the proximal phalanx; but the measurement from the upper part of the vagina to the lowest part of the commissure of the vulva is four inches. Thus the distance from the external surface of the body to the extremity of the vagina is one inch greater than that of the vagina itself. Normally, when the tip of the forefinger touches the highest point of the vagina, the metacarpophalangeal joint corresponds exactly with the entrance of the vulva. In very stout subjects the distance appears greater because of the thickness of the labia majora.

In effecting an *ocular* examination of the vagina, the patient is placed in the position above described, or, as is more convenient under some circumstances, lying on her back and the knees separated. The examination by means of the speculum is also effected in either of the two positions indicated, but most easily in the latter. [We never place the patient on the back for a speculum examination,

because we use only the Sims speculum which requires the left lateral semi-prone position.] In searching for fistulæ in the vesico-vaginal septum, the patient is sometimes placed on the hands and knees.

OBSTRUCTIONS OF THE VAGINAL ORIFICE AND VAGINA: DIAGNOSIS OF THESE.

On attempting to introduce the finger at the vaginal orifice an obstruction may be encountered. This obstruction may be due to any one of the following conditions:

Adhesion of the labia majora;
Absence of the vagina (congenital);
Imperfect formation of vagina;
Unruptured hymen; or,
Stricture of the lower part of the vagina (acquired).

Adhesion of the labia majora is distinguished from absence of the vagina by the use of the probe or finger. Imperfect formation of the vagina is also readily distinguished from either of these two former conditions. Obstruction due to the hymen is distinguished from the two former by its situation, the hymen being a short distance within the vaginal canal and not on a level with the perineal surface.

In cases where the vagina is very short, ending at or near the hymen, the physical examination may reveal conditions pretty nearly resembling those where the hymen is the obstructing agent; the finger can only be made to pass a short distance. The distinction then rests on the presence of the catamenial discharge in the latter, its absence in the former class of cases. Where there is obstruction to intercourse, but menstruation is present, it is clear that the vagina cannot be altogether absent. But there may be obstruction to intercourse from a thickened, but still perforated, hymen. If the hymen were absolutely imperforate, there would be menstrual retention with its peculiar signs, in addition to other signs of obstruction. Congenital stricture of the vagina is usually situated higher up than the seat of the hymen. Congenital narrowness of the vagina would be easily and obviously distinguished from obstruction due to thickened hymen. Spasmodic action of the sphincter vaginæ may produce obstruction to the entrance of the finger, or to sexual intercourse, but this form of obstruction could hardly be confounded with that due to thickened or imperforate hymen.

Diagnosis of Cases of Suspected Defective Development or of Entire Absence of the Uterus, of the Vagina, etc.—It is occasionally necessary to determine what is the state of the internal generative organs in such cases, in reference to the advisability of recommending marriage.

In the first place, it appears from a careful consideration of recorded facts, that the condition of the *external* generative organs gives but little clue to that of the internal; that is to say, that there is no constant and invariable relation between the degree of development of the generative organs, external and internal. Thus we meet with cases recorded in which the vulva, being pretty well developed, the pubes well covered with hair, the breasts not imperfectly formed, the uterus is entirely absent. And the opposite condition has been met with, viz., absence of developed external generative organs with a uterus sufficiently well formed to exercise its functions. Between the two extreme cases all sorts of gradations are witnessed and have been recorded. In cases where the internal generative organs are imperfectly formed, the variations from the normal standard are numerous in kind and degree; the uterus may be double, one cornu being well developed, the other imperfectly so, or both equally well developed. In extreme but very rare cases the uterus is entirely wanting. Kussmaul,* in his elaborate work, states that many of the older recorded cases of absence of uterus are not reliable, as the diagnosis rested on the absence or defective condition of the vagina; and he believes that in the more modern instances, even where a more careful and extended examination was performed, one cornu of the uterus may still have been present, escaping recognition.

It is usually the case, that where the uterus is defectively formed, the vaginal canal is also defective in some way; but cases are on record in which the vagina was altogether absent, while the uterus was developed enough to fulfil its functions: in these instances most may be done in the way of relief to the patient.

1. The indications offered by the state of the *breasts.* They may be found tolerably well developed in cases where careful examination convinces us that the uterus is wanting, and the vagina absent. And, as Kussmaul very pertinently observes, the mammary glands do now and then become

* *Op. cit.*, p. 108.

enlarged and developed in the opposite sex. Breasts tolerably large and developed would, however, indicate that the patient had arrived at the age of puberty.

2. The development of the vulva, presence of hairs on the pudendum, etc. The vulva may be apparently well formed, there may be the usual amount of prominence of the mons veneris, the parts may be well covered with hair, and, in fact, the external appearances may be such as are observed under normal circumstances, and yet the uterus and vagina may be wanting. Indeed, cases have been observed, as the one related by Dr. Ormerod and Dr. Quain, in which, with these external apparent evidences of womanhood and capability for marriage, not only was the uterus absent, but the ovaries were wanting. A "small mass, apparently of a glandular structure," found in the left wall of the narrow sac representing the vagina, was the only possible representation of the ovaries.* The patient died in an anæmic state at the age of 33, and had suffered from nasal hæmorrhages, the monthly periodicity of which seemed to point to vicarious menstruation. The case is remarkable as showing very clearly how little relation subsists, necessarily, between the development of the external and internal sexual organs. I have myself met with cases in which the breasts were normal, the pudendum normal and well covered with hairs, but no evidence of a uterus could be obtained.

When it is an object to ascertain by examination whether the uterus and vagina be present or not, the method to be pursued is the following: A sound is to be introduced into the bladder, which should not be empty at the time the examination is made, and held lightly but firmly therein. One or two fingers of the left hand, well oiled, are then to be introduced as far as possible into the rectum. The sound can now be felt by the extremity of the finger in the rectum, and a means is at once afforded of judging of the nature of the tissue intervening. If the uterus be absent, the sound can be felt by the finger high up in the pelvis, and no intervening hard substance, such as that constituted by the uterus, can be detected; but it is necessary, in order that this point may be conclusively made out, that the sound in the bladder and the finger in the rectum should be pushed as far as possible, for if it be only just made to enter the blad-

* "Trans. Path. Soc.," vol. vii., p. 271.

der, the point of the instrument is, under ordinary circumstances, readily felt by the finger in the rectum. The uterus would of course be sought for in the first instance in the middle line of the body, but if a careful examination failed to discover any hard substance in that position, it should be sought for on each side. Where the uterus is double, it is very frequently not symmetrical, the one cornu being large and well developed, the other small and imperfect; and in such a case the larger cornu lying, as it would do, rather to one side, might not at first be made out, or if made out, might be mistaken for something else (Kussmaul). This double or combined examination by the rectum and bladder is thus capable of giving important information, for although we might not be able to affirm after making such an examination that the uterus was entirely absent, we could hardly fail of detecting an enlarged and distended uterus, supposing the uterus to be so enlarged and distended.

The method of examination in question also enables us to form some idea as to the condition of the parts in suspected absence of the vagina. Thus, in cases where the only external evidence of a vagina is a small blind sac which is just capable of receiving the point of the sound, or in cases where the sac is large enough to admit the little finger for an inch or two, the combined examination furnishes data of some value. If the parts intervening between the point of the instrument and the finger be very thin, it gives reason to think that there is no vaginal canal between: but this is by no means conclusive evidence of the fact. If the uterus were found very small, or absent altogether, the vagina would be more likely to be also absent. But, on the other hand, supposing the uterus were found to be present, the septum between the rectum and the catheter being apparently very thin, it would require some care to decide as to the presence or absence of the vaginal canal in this thin septum. In some cases the uterus is pretty well formed, and becomes distended with menstrual blood, which cannot escape, because the vagina is absent at some part of its course; and the vagina may be nearly the natural size at its extreme upper and lower portions, the intermediate portion being wanting; or it may be, as is the more common case, very small below, and absent above.

Double Vagina.—The vagina may be double, in which

case two canals open side by side externally. The septum between them is usually very thin. (See Malformations of Uterus.)

Hardness or Resistance of the Walls of the Vagina.—A condition of the wall of the vagina, recognizable by the touch and very important in a diagnostic point of view, is *firmness*, *hardness*, and *resistance*, especially at the upper and interior part of the canal. The vagina appears to the touch fixed, rigid, and immobile; such a condition is one of the early signs of the presence of cancer of the lower part of the uterus. The non-resistant, soft, velvety feel of the mucous membrane is wanting in such cases at the affected parts.

Cancerous disease of the vagina is more frequently not primitive, the disease usually spreading from the uterus. When the disease is far advanced, we may find the vaginal walls very much thickened by the cancerous deposit; nodulations may be felt; and ulcerations, which, when sufficiently advanced, give rise to production of fistulous openings, are detected by the finger. The diagnosis of cancer of the vagina is intimately connected with that of cancer of the uterus, the general symptoms in the two cases being, for the most part, identical.

TUMORS PROJECTING AT OR BEYOND THE OSTIUM VAGINÆ; DIAGNOSIS.

Soft Non-resistant Tumors.—A soft *fluctuating* tumor presenting itself at the ostium vaginæ may be constituted by a *prolapsed bladder* (cystocele), the cervix of the uterus being very generally in such cases prolapsed together with the bladder. Or there may be *prolapsus of the vaginal wall in conjunction with ascites.* In the former case there is a peculiar difficulty in regard to micturition, for the patient is unable to evacuate the bladder perfectly unless the swelling be first reduced by pressure upward. Micturition is frequent and painful, a ropy mucus is usually present in the urine discharged from the bladder. The catheter introduced passes downward into the tumor, the nature of which is thus at once made manifest. In the case of the other, but less common, affection the tumor is also reducible by pressure, but returns on the patient resuming the erect posture. Dr. West* relates a case in which a *cyst*

* *Op. cit.*, p. 634.

of the vagina, the size of an egg, projected from the vulva, and had just the appearance presented by a prolapsed bladder. By the use of the catheter, however, the nature of the tumor was made evident.

In cases of *retention of the catamenial fluid from imperforate hymen*, there will be found between the labia on examination by the finger a somewhat tense tumor with fluid contents, and this tumor may project slightly from within the os vaginæ. In such a case the absence of menstruation, and the impossibility of finding an opening into the vaginal canal, would clearly indicate the nature of the case.

A soft but *non-fluctuating* tumor projecting from the vagina at its inferior part, and reducible by pressure, is present in cases of *vaginal rectocele*. In such cases the nature of the tumor is easily made out, the scybalæ in the projecting pouch of the rectum are felt by the finger: moreover, the finger can be introduced in *front* of the tumor; in cases of cystocele, on the contrary, the finger passes only *behind* the tumor.

Entero-vaginal Hernia.—Another variety of tumor is that due to hernia of the intestines—entero-vaginal hernia. This is a rare affection. Some exceedingly interesting cases of the affection are related at length in the work of the late Dr. D. D. Davis.* A case of this rare affection was also recorded by Mr. Prescott Hewett.† The tumor projected beyond the labia, and proceeded from the floor of the vagina. The patient was suffering from symptoms of obstruction, and had not called attention to the existence of the tumor in question. Dr. Fordyce Barker,‡ in an interesting paper, relates four cases. In the first, swelling came on during labor; it was reduced under chloroform; labor proceeded well; cure. 2. A pregnant woman at seven months had a sudden strain; pain; severe peritonitis; a soft tumor was found projecting at vulva, size of the fist; reduction; lint and tannin pessaries employed; delivery at term; cure. 3. Patient in eighth labor twenty-eight hours; violent hysterical mania; urine drawn off under chloroform; the head was found descending, and a vaginal enterocele also; it was reduced; the forceps applied; delivery; cure. 4. By Dr. Clements. Misstep in the seventh month of pregnancy; fall forward, followed by

*"Principles and Practice of Obstetric Medicine," vol. i., p. 161.
†*Brit. Med. Journ.*, Sept., 1861, p. 254.
‡*Amer. Journ. of Obst.*, vol. ix., p. 177.

pear-shaped protrusion; reduced by fingers; kept in bed five weeks, but tumor always came down on defæcation; delivered at term. Nine days after labor violent pain during defæcation, followed by shivering, cold extremities, nausea, fainting; chloroform and knee-chest position; relief; protrusion felt in vagina, size and shape of distended thumb of a glove, at bottom of Douglas pouch, a little to right. Several succeeding attacks came on after rising in the morning, and in fifteen minutes developed symptoms of acute peritonitis; pain and tenderness; tympanitis; rapid pulse. Sponge pessary used with advantage. Attacks gradually went off at end of two years.

The nature of the tumor is recognized by means of the tympanitic sound elicited on percussion, by the impulse produced on coughing, usually by the possibility of reduction of the tumor by the taxis, or on the patient assuming the horizontal posture. The employment of the catheter will distinguish the case from one of cystocele.

[The cases above described seem all to have been hernial protrusions from the Douglas *cul de sac*.

We occasionally have hernial protrusions through the anterior wall of the vagina.

Prof. G. M. B. Maughs (Prof. of Obstetrics and Diseases of Women in the Missouri Medical College) describes an interesting case in the *St. Louis Med. and Surg. Journ.*, May, 1879.

The hernia descended through the vesico-uterine *cul de sac* and protruded from the vagina "in a sausage-shaped body" for two or three inches. Prof. Maughs reduced the hernial mass, pushing the vaginal covering up into the abdominal cavity. When it was reduced the finger could be pushed up through the hernial opening between the bladder and the uterus. Prof. Maughs then had the happy thought of closing the vaginal aperture by silver sutures after scarification. The operation was successful. The patient bore two children afterward without reproducing the hernia. And Dr. J. Marion-Sims examined her seven years after the operation (1877) and found the parts operated on perfectly normal. This is the only case of the kind on record ever cured.

Two months ago (October, 1882), Dr. Bailey, of Middletown, Conn., referred to my father a case of entero-vaginal hernia, where the hernial mass, size of a small orange, protruded from the right side of the vulva. It descended

through an opening to the right of the neck of the bladder, near the pubic ramus, and large enough to admit the point of the index finger. She returned home without our attempting to do anything for her relief.]

Hard Resisting Tumors projecting from the Ostium Vaginæ.—When the projecting tumor is more or less solid or firm, it is due to *inversion of the uterus*, *polypus of the uterus*, *prolapsus of the uterus*, or to *elongation and hypertrophy of the cervix uteri.* With these may be combined prolapsus of the adjacent organs, the bladder, rectum, etc.

DISEASES OF THE VAGINA.

Congenital Defects.—In some rare instances certain of the external generative organs are wanting, or exhibit only a rudimentary formation. The whole of the external sexual organs may be found absent, or there may be present what is termed "cloacal formation," the rectum, the vaginal canal, and the urethra opening into one common external orifice. And irregularities of other kinds may be observed, giving rise to conditions which have been described as due to hermaphroditism. A full consideration of these various kinds of defective formation of the external generative organs cannot be entered upon in this work. Particulars concerning these rare cases will be found in several systematic treatises.* The defects which are the most practically interesting are those which relate to the condition of the orifice of the vagina, and the canal of the vagina itself. These have been already described in previous remarks on their diagnosis.

STRICTURE OF THE VAGINA.

There are two classes of cases coming under this denomination. First, we have those *congenital* instances in which the vagina is normal below, the hymen in its usual position, but a short distance beyond the hymen the finger meets with an obstruction—the canal of the vagina, in fact, appears far too short. The apparent shortness may prove to

*A good account of the subject will be found in Kiwisch's "Klinische Vorträge," Band ii. (third edition by Scanzoni. Prague: 1857). On the subject of hermaphroditism, the reader is referred to the admirable essay by Sir J. Y. Simpson, published in vol. ii. of his "Obstetric Works."

be due to a fibrous or membranous septum dividing the vagina transversely into two parts. The usual seat of this septum is the junction of the upper with the middle third of the vagina. Secondly, we have cases of real stricture of the vagina, due to adhesions of the upper walls, following lacerations or wounds of the vagina, in parturition, with subsequent cicatrization and contraction.

Regarding the congenital class of cases, we may have complete absence of an opening in the septum, there being then usually found an accumulation of menstrual blood above the obstructing membrane or partition; or, on the other hand, there may be an opening sufficient to allow of the escape of menstrual blood. It is obvious that in the former case there is no possibility of menstruation occurring, and impregnation is equally impossible. Such instances are not common. Complete congenital closure of the vagina might be confounded with imperfect hymen, or with imperforate condition of the os uteri. Incomplete (*i.e.*, permeable) congenital stricture of the vagina might be confounded with obstruction from resistant hymen. The diagnosis in these several instances would be made out by careful combined examination by the vagina and rectum. The finger being introduced into the rectum, we are enabled to determine whether the obstruction felt be really the extremity of the vagina or not; the position of the uterus would indicate this early enough. It is of great assistance in such cases to make an examination during the menstrual period, as apertures are then found which escape recognition at other times.

Acquired complete stricture of the vagina is very easily distinguished from the congenital variety by the circumstance that in the latter the patient has never menstruated. In acquired stricture of the vagina the canal at the seat of the stricture is generally irregular in form and shape, contorted or knotty, and firm fibrous bands are to be felt under the finger. The seat of the stricture may be high up in the vagina, or low down; any part of the canal may be affected. Menstruation more often still persists, but the stricture, if complete, causes complete retention; and, moreover, the patient in the latter case remains afterward sterile. The history very generally points conclusively to the diagnosis in these instances of acquired stricture of the vagina.

Extreme narrowness of the vagina, hardly amounting to stricture, may be met with, the canal being quite patent,

although exceedingly small; the condition simply interfering with due performance of sexual intercourse, though not necessarily with impregnation. It has importance, for this reason in the first place, and in the second from the circumstance that when the vagina is very narrow it is also often short, and the uterus is found imperfectly developed. All degrees of this narrowness may be met with in different cases.

It may be worth while in this place to mention the fact that, in cases of vaginal stricture or narrowness, sexual intercourse has been known to have been effected by the urethra; the latter canal has in such cases been found to have undergone great dilatation.

The treatment of these various conditions will be considered presently.

VARIOUS MORBID OR UNUSUAL CONDITIONS OF THE HYMEN.

The hymen is a membrane varying exceedingly in its form, structure, and dimensions. On making a digital examination, the point of the finger, in passing backward, downward, and inward from the point where the urethral orifice is situated, encounters the hymen, if this membrane be present; the membrane itself being situated within a short distance of the posterior labial commissure. The finger passes into a recess for a short distance before it comes in contact with the obstructing body. The most usual form of the hymen, where still intact, is crescentic, the concavity being directed forward and upward: the canal of the vagina is thus closed posteriorly, but not anteriorly. This is the most common form, but occasionally the hymen is circular, and the opening into the vagina is in its centre. In the first case the tip of the finger would meet with the opening a little nearer to the urethral orifice than in the second. The presence of the hymen was at one time considered evidence of virginity, and its absence proof to the contrary; but neither of these positions is sustained by known facts. Instances are recorded of the presence of the hymen in prostitutes who were at the same time the subjects of syphilis; on the other hand, in women of known virtue and propriety of conduct the hymen is often indistinct or wanting. If we are called upon to make a digital examination of a reputed virgin, we should expect to find a difficulty in introducing the finger into the vagina, owing

to the presence of the hymen; but we should not be justified in forming a conclusion unfavorable to the character of the individual from the fact, alone, that no such impediment to the passage of the finger was experienced. And with reference to the *degree* of resistance, we should expect to find, in cases where the hymen is tolerably perfect, considerable differences in different cases. Thus, the membrane may be, and indeed usually is, thin and non-resistant enough to allow of the ready distension and stretching of the orifice in its centre or at its side by the pressure of the finger; in certain rare cases this condition persists after marriage with the occasional very troublesome result that intercourse is imperfect or impossible: on the other hand, it may be so dense and tough as to resist this distension altogether, or the membrane may be so loose and lax that the pressure of the finger, instead of opening it, carries the membrane before it, as in the case of the finger of a glove pushed within itself. Lastly, there may be only such slight perforation in the membrane as to be hardly recognizable, and not at all by the point of the finger alone: the obstruction is apparently complete.

Menstrual Retention due to Imperforate Hymen.—Menstrual retention associated with imperforate hymen is observed in young women who have never menstruated, who have arrived at puberty, and who have at that time experienced, monthly, and month after month, severe pain in the hypogastric region without any fluid escaping from the vagina, and who present symptoms indicative of distension of the uterus with fluid for which there is no natural outlet. In most of such cases, the hymen is found to be imperforate, and the finger, when introduced into the vulva, comes upon a very tense elastic swelling, constituted by the thickened hymen pressed downward and put on the utmost stretch by the fluid incarcerated above it. The menstrual blood distends the vagina and the uterus under such circumstances, and we should expect to find evidence of such distension of the uterus in the presence of a round firm tumor above the pubes (see Examination of the Abdomen), or on examination from the rectum. But in some cases, although the patient has never menstruated, and although there are all the signs of menstrual retention to an extreme degree, we do not find, on examination, any tense elastic swelling at the situation of the hymen; for the menstrual retention may be due to congenital closure of the os uteri, or to an

obstruction of the vagina higher up than the situation of the hymen. The latter description of cases will be presently considered. In one case which came under my notice there had been at first such a retention. The fluid was discharged by bursting, and the aperture afterward again closed up but not quite completely, leaving such a minute aperture that it was with difficulty discovered.

TREATMENT OF VARIOUS FORMS OF OCCLUSION OF THE VAGINA.

Absence of the Vagina.—There are two classes of cases to be dealt with—(1) Those in which the absence of the vagina is accompanied with signs of menstrual retention; and (2) those in which no signs of menstrual retention are present. In the first class of cases operative measures are generally called for, while in the second this is not usually, or at all events necessarily, the case. The cases of retention have been already dealt with (see p. 40).

The point has hardly been raised as to whether in cases of absence of vagina without menstrual retention operative measures are called for. If the uterus be present, if the patient be healthy and well-formed, and, further, if menstrual molimina have been present—even although there may be no evidence of menstrual retention—under these circumstances, the attempt to make an artificial vagina could not be said to be absolutely unjustifiable. Until the uterus has been reached, it could not be said that menstruation, and consequently pregnancy, was quite out of the question. In making these remarks, I have in my mind a case respecting which I was consulted some time since, and in which I have reason to think that the formation of a vagina would be attended with advantage.

Stricture or Occlusion of the Vagina.—The stricture of the vagina, resulting from the contraction following mechanical injuries received during parturition, is often very difficult to remedy. The two methods of cure are by incision and subsequent dilatation, or by dilatation alone; and which of the two courses is preferable will be determined by a consideration of the nature of the case. Where the stricture is very firm, and at the same time limited in extent, an incision by a blunt-pointed bistoury at once restores the canal to its natural size, the opening being maintained by careful plugging of the vagina with oiled lint. The plug-

ging must be persisted in for some days. In other cases, where the stricture affects a greater extent of surface, cutting may be less necessary, and the gradual dilatation by bougies may be preferable. Any tight bands encountered as the process of dilatation is being effected should be just touched with the edge of the knife to facilitate the dilatation.* In cases where labor supervenes in these cases of stricture of the vagina, the fœtal head forms a very efficient dilating body, but the dilatation often requires to be assisted by the careful use of the knife. Much time and patience will be necessary in some cases to restore the canal to its proper condition, owing to the great tendency of the cicatricial tissue to contract after being divided. Where cutting operations are performed strict antiseptic precautions are essential.

In cases where the stricture is congenital, there being, however, a minute opening, allowing of menstruation but rendering intercourse difficult, the existing opening is to be sought for by means of the speculum, and enlarged by the knife, the canal being subsequently plugged with lint, to prevent adhesion of the cut surfaces. [Cut where there are obstructing bands; dilate with fingers, nick with scissors, distend, tear laterally, and then use the glass vaginal plug of Dr. J. Marion-Sims. It is much better than plugging with lint. The same vaginal plug must be used in such cases as those below alluded to as *obstruction due to the hymen.*]

Simple narrowness of the vagina will be best treated by careful employment of bougies, gradually increased in size until the canal is sufficiently large to admit of intercourse. Parturition is the great cure for this condition, and it is remarkable how easily an apparently very narrow vagina gives way, so as to allow of the passage of the large head of the fœtus. Once fully dilated in this manner, the cure is complete.

Treatment of *Obstruction due to the Hymen.*—In patients who have menstruated, the obstruction usually requires to be removed on account of its interference with the performance of sexual intercourse. The treatment of such cases is simple. The operator having carefully made out by examination the shape, size, and relations of the hymen, which, un-

* Dr. Braxton Hicks has related some interesting cases of acquired stricture of the vagina. The plan pursued in treating these cases, and which proved very successful, was a combination of cutting and dilatation.—("Obst. Trans.," vol. iv.)

der these circumstances, may be found exceedingly dense, firm, and thick, makes three or four incisions radiating from the existing aperture, by means of scissors, in the obstructing membrane, care being taken not to involve the vaginal wall itself in the incision; it is recommended by some authorities that a circular piece be actually cut out, the whole hymen being thus removed. After the operation, a piece of lint, rolled up in a cylindrical form and dipped in oil, should be carefully introduced. The tampon of lint should be so large as to slightly extend the canal and prevent the healing by the first intention. The lint will have to be removed, and a fresh piece inserted twice a day, for the next two days.

The treatment of cases of imperforate hymen, causing menstrual retention, has been already discussed (see p. 40).

VAGINITIS.

Inflammation of the vaginal canal, in an acute form at least, is not a very common affection, although in cases of chronic inflammation of the uterus there is generally an increased vascularity of and secretion from the vaginal mucous membrane. Again, vaginitis is sometimes present in cases of gonorrhœa, but in the latter affection it is ordinarily the vulva or entrance of the vagina, rather than the vagina itself, which is the seat of the inflammatory action.

Treatment.—In cases where there is much heat, tenderness, and congestion of the vagina, leeches may be advantageously applied round the lips of the vulva; fomentations, by means of flannels wrung out of hot water or decoction of poppies, may be usefully employed after the bleeding, as a substitute for it in some instances. Hip-baths and injections of tepid or of quite cold water will be necessary, a stream of water being applied by the self-acting douche apparatus, described at p. 120. Other local applications may be required where the disease has assumed a chronic obstinate form. Scanzoni speaks highly of the employment of a cotton tampon, the surface of which is sprinkled with powdered alum, this being inserted in the vagina for a few hours every two or three days: the alum to be diluted with powdered sugar, if the sensibility be considerable. Solution of nitrate of silver of varying strengths, according to circumstances, or the solid stick of caustic, may be also necessary. The general treatment is quite as important

in the management of such cases as the local one. Rest, abstinence from intercourse, the horizontal posture, gentle aperients, food in moderate quantity, absence of excitement —all these are essential to the cure of the affection. When the patient has recovered, the principal cause which brought about the attack must be for the future avoided (see General Treatment of Leucorrhœa, p. 117). The vaginitis associated with gonorrhœa requires a peculiar treatment. In the treatment of all cases of vaginitis, whatever be the cause, very great importance is to be attached to the observance of cleanliness: frequent ablutions should be employed. [For vaginitis from whatever cause, irrigation and cleanliness are essential. Wash out the vagina thoroughly, then apply a solution of nitrate of silver, one to two drachms to the ounce of distilled water, freely to the whole surface. It will produce pain when it touches the meatus urinarius and outer orifice of vagina. A little vaseline or olive oil may be applied to the sensitive region. Twenty-four or thirty-six hours afterward the patient must use warm vaginal injections properly, according to Emmet's plan, on back, and bed-pan, medicated with carbolic acid, borax, muriate ammonia, or any other antiseptic two or three times a day. In five or six days the nitrate of silver may be applied again if necessary; often one application well done suffices. But the patient must keep up daily irrigation of the vagina (twice a day) indefinitely in chronic cases. I have seen chronic vaginitis cured in a week by this plan which had existed for two or three years.]

ALTERATIONS OF SENSIBILITY OF THE VAGINAL CANAL, OR OSTIUM VAGINÆ.

Spasm and Hyperæsthesia: Vaginismus.—In making an examination by means of the finger, it may be found that the entrance of the vagina is extraordinarily sensitive, the slightest touch giving rise to great discomfort; and in some cases this is so extreme that an examination is hardly practicable. This condition must not be confounded with tenderness to the touch of the more ordinary kind, which may proceed from inflammation or abscess of the vulva, from cancerous inflammation, from pelvic inflammation, gonorrhœal or syphilitic inflammations, etc., in most of which cases the tenderness is quite unlike that now under consideration. Nor must it be confounded with excessive sensi-

tiveness of the uterus itself, such as is present in acute flexion of that organ (see Flexions). The condition in question is really a hyperæsthesia of the part, dependent not always on the same cause. It has been described by various names. Marion-Sims, Debout, and others, have of late years redirected attention to it, especially as a cause of sterility, and as interfering with sexual intercourse. The parts are more sensitive to a slight touch than to more rough handling. The extreme sensitiveness is mostly accompanied by a painful contraction of the vaginal sphincter —hence the terms "vaginal spasm," "vaginismus," which have been applied to it. The difficulty experienced in introducing the finger is dependent on the spasmodic contraction of the muscles. It has been described as most commonly present in individuals whose nervous system is generally in an easily excitable state. Dr. Ferguson believed that in cases of "irritable uterus," one of the seats of this neuralgic malady was the vagina itself, this latter being so exquisitely tender as to render intercourse intolerable. In Scanzoni's opinion, the disorder especially accompanies anteversions, retroversions, flexions, or actual changes of the uterus itself, and that it is not rare in connection with spasmodic affections of the urethra, bladder, or rectum. Sir J. Y. Simpson has in some instances found true small nodular neuromata under the mucous membrane.

The affection may not be due to the same cause in all cases. I am of opinion that the essence of the disorder is a local alteration or irritation of the nerves at the spot itself.

In one case which occurred under my own observation, the patient was a lady who had had two children: for some months there had been extreme sensibility of the ostium vaginæ, intercourse being impossible. On careful examination I found that the sensibility was actually limited to one little spot near the posterior commissure, over an area of less than one quarter of an inch. The case was cured by paring away the mucous membrane over the spot, and bringing the edges together by fine silver sutures. Here it seemed probable that the hyperæsthesia was dependent on laceration and inflammation of some of the nerve fibres during labor. This hyperæsthesia is I believe not unfrequently due to partial laceration of the hymen. A very marked case of the kind recently came under my notice, in which this was evidently the cause. The slightest touch gave rise to great suffering, and intercourse had been found

to be well-nigh impossible. Here the hymen was very thin, very easily stretched upward by pressure, returning to its original shape on the pressure being withdrawn.

Treatment.—In the treatment of this affection, the first object in view should be to remove its cause. The condition of the vulva, of the vagina, and of the uterus, must be severally explored, and any disorder discovered rectified.

It is probable that if the cases were carefully examined, many would be found susceptible of the explanations mentioned above, and therefore capable of being similarly treated, namely, by removal of the affected portion of mucous membrane by the knife, or obliteration of the sensitive part. Other cases may be cured by rather freely incising the mucous membrane at the situation of the hymen, and carefully packing the passage with oiled lint so as to prevent adhesions, subsequently employing occasionally a dilator to maintain the aperture the proper size. Marion-Sims * has recommended a glass speculum to be kept in the passage to prevent adhesions: this dilator to be worn for some little time. Scanzoni recommends two or three weeks' dilatation, to be effected by a series of graduated glass specula, used for half an hour to an hour at a time every two or three days; and afterward avoidance of intercourse, hot hip-baths, and applications of belladonna.

In cases where no limited local derangement can be detected the general treatment is a matter of great moment. Regular, temperate living, exercise in the open air—especially horse exercise—use of the sponge-bath, friction of the skin, cultivation of the bodily rather than of the mental powers, these measures are not subsidiary, but of primary importance in the treatment, and the patient cannot be fully restored to health if these simple precautions be neglected.

[This subject is a matter of so much practical importance that I need not apologize for the long extract here made from "Clinical Notes on Uterine Surgery," by Dr. J. Marion-Sims, p. 318:

To examine a case of suspected vaginismus, place the patient on the back with the legs flexed, and gently separate the labia. The patient will at once manifest symptoms of alarm and agitation—not that we hurt her, but she feels an indescribable, insuperable dread of being hurt. The gen-

* "Obst. Trans." vol. iii.

tlest touch of the ostium vaginæ, with the finger, a probe, even with a feather, or bit of cotton on the end of a probe, produces great agony. The sensitiveness is at all parts of the vaginal outlet. It is very great at and near the meatus urinarius on each side, where the hymen takes its origin; and greater still near the orifice of the vulvo-vaginal gland; but often the most sensitive point is at the fourchette, where the hymen projects upward. The whole outer face of the hymen is sensitive, but it is more so along its reduplication or base, just in the sulcus between it and the vagina.

But while the outer face of the hymen and the adjacent parts are so sensitive, the inner is not. If we turn the patient on the left side and separate the nates and vulva, so as to pass a sound through the hymen, without touching its outer surface, and then make pressure with it laterally, or backward on the inner or vaginal aspect of this membrane, we will not find there any abnormal degree of sensitiveness.

Touching the outer surface of the hymen in any portion of its reduplication produces not only pain, but an involuntary spasm of the sphincter muscle, both of the vagina and anus. In some instances the sphincter ani feels almost as hard as a ball of ivory; and one of my patients supposed it to be a tumor that would require exsection.

Vaginismus is usually uncomplicated with inflammation; but I have met with several cases in which there was redness or erythema at the fourchette. Usually the hymen is thick and voluminous, and when the finger is forced through its free border it feels as if encircled by a fine cord or wire.

The treatment consists in the removal of the hymen, the incision of the vaginal orifice, and subsequent dilatation with vaginal plug.

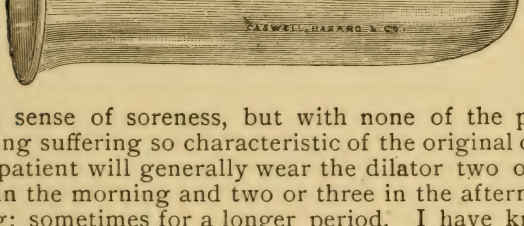
Placing the patient (etherized) on the back, with the thighs well flexed over on the abdomen, the orifice of the vagina is to be forcibly dilated by fingers or instrument. Then seize the hymeneal membrane with a delicate pair of lock-forceps just at its junction with the urethra on the left side, and putting it on the stretch, clip with properly curved scissors till the whole is removed in one continuous piece.

Then pass the index and middle fingers of the left hand into the vagina, separate them laterally, so as to dilate it as widely as possible, putting the fourchette on the stretch; then with a scalpel cut through the vaginal tissue on one side of the mesial line, from above downward, terminating at the raphé of the perineum. This cut forms one side of

a Y. Then pass the knife again into the vagina, still dilating with the fingers as before, and cut superficially in like manner on the opposite side from above outward, uniting the two incisions at or near the raphé, and prolonging them quite to the perineal integument. Or these vaginal incisions may be made one on each side of the raphé and parallel with it, terminating a third of an inch or more apart, on the perineal surface.

The bleeding, usually trifling, is arrested by the introduction of the vaginal plug. I have had two cases where it was necessary to resort to the iron cotton tampon for 24 hours. Generally the dilator is introduced at once. It is made usually of glass, sometimes of metal or ivory. I prefer glass because it is easily kept clean, and being transparent, we can see the cut surface, and indeed the whole vagina, without removing it. Its introduction is attended

FIG. 215.



with a sense of soreness, but with none of the peculiar agonizing suffering so characteristic of the original disease.

The patient will generally wear the dilator two or three hours in the morning and two or three in the afternoon or evening; sometimes for a longer period. I have known a few who wore it six or eight hours at a time. I have often been astonished at the rapidity with which the cuts sometimes healed, the case being seemingly facilitated by the pressure of the glass tube.

I direct the dilator to be worn daily for two or three weeks, or longer, or till the parts are entirely healed and all sensitiveness removed.

The dilator is a tube about three inches long, slightly conical, open at one end, closed at the other, and an inch and a quarter or an inch and a third or more in diameter at the largest part, near the open or outer end.

There is a depression or sulcus on one side for the urethra and neck of the bladder (Fig. 215). The outer open end

allows the pressure of the atmosphere to assist in retaining it easily in the vagina.

It is held in place by a T bandage. When closed at both ends, it is much more difficult to retain it *in situ*. The depression for the urethra is very important, for I found that a perfectly round cylinder, worn for three or four hours, always injured the urethra; and, moreover, this urethral depression assists the self-retaining power of the instrument.

From personal observation I can confidently assert that I know of no disease capable of producing so much unhappiness as vaginismus, and I know of none that can be cured so easily and so safely.

My father and myself have operated successfully in more than a hundred cases, and since he first published his views on the subject the operation has been accepted and performed everywhere with uniform success.]

FISTULÆ.

There may be an abnormal communication between the bladder and vagina, *vesico-vaginal fistula*, the aperture varying much in size and in shape. In some cases the whole of the base of the bladder may be destroyed, or this together with the urethra. The perforation is generally an effect of the long pressure of the head during labor. In some rare cases a communication has been found between the bladder and the cervix of the uterus (*utero-vesical fistula*). Lastly, we have cases in which there is a perforation of the vagino-rectal septum. These are cases of *recto-vaginal fistula*.

Great misery and distress are produced by these unnatural openings, and although in themselves not grave, they are most troublesome and annoying to the patient.

Treatment of Vesico-vaginal Fistula.—There is no department of surgery in which such marked improvement has been made of late years as in the treatment of this, which is the most common of the fistulæ connected with the generative organs. Cases of vesico-vaginal fistula are now, almost without exception, capable of cure, though great perseverance and patience are requisite in many cases to obtain success. To Dr. Marion-Sims is due the merit of introducing the use of metallic sutures instead of sutures of thread or silk, which were formerly used, for the purpose of bringing

the edges of the wound together, and of an improved speculum, by which latter instrument access is better obtained to the part involved, and the manipulations thus greatly facilitated. Mr. Gossett of London in 1834, published a case illustrative of the advantages of metallic sutures, but his practice never attracted attention, or led to its adoption by others. Since Dr. Marion-Sims introduced the use of the "silver suture," other modifications of the operation, the use of clamps, buttons, bars, etc., as assisting in holding the edges of the wound together, have been adopted, but latterly they have been found superfluous, and it appears that the really important part of the improved operation is the greater nicety with which the edges of the fistulous opening can now be pared, and the newly cut surfaces kept in close apposition. The sutures now employed are generally of wire, but some operators prefer silk.

The operation, as now practiced by several distinguished physicians and surgeons, is essentially the same, particular points being more insisted on by some than by others. The most complete work on the subject is Dr. Emmet's,* in which are recounted a large number of cases, many of them of great difficulty. Dr. Emmet attaches much importance to the preparatory treatment, consisting in many instances of preparatory operations, the object of which is to free the soft parts which have to be pared from cicatricial adhesions by bands, which bands prevent the pared edges from coming together properly. To the method of performing these preparatory operations Dr. Emmet attaches much importance. Cicatricial bands or resisting strictures are to be cut through by scissors instead of the knife, for the reason that the cut of the scissors heals more slowly. There is also less risk of pyæmia. The cutting asunder of these interfering bands may frequently be done at the time of the actual operation, the fistula closing before the wounds inflicted by the side of the fistula have had time to granulate and contract. But the wearing for some days of a glass speculum after cutting through the adhesions and bands is frequently advisable, as in this way previously contracted surfaces are permanently lengthened. Dr. Emmet also insists on the use of baths, injections, etc., for producing a healthy condition of the mucous membrane. Some days may have to be spent in this prepara-

* "Vesico-Vaginal Fistula," 8vo., p. 250. Wood & Co., New York, 1868.

tory treatment. Dr. Emmet's recommendations are most useful and practical. He uses scissors of various curves for paring the edges. In the work of Dr. Savage also will be found very concise directions for the operations, with drawings of the various instruments required. Before the operation the bowels must be thoroughly evacuated. For the operation itself, the patient is placed on the back, as in the operation of lithotomy, on the side, with the body partially pronated, or on the hands and knees. The two former methods allow of an anæsthetic being easily given; the latter method is the best in difficult cases. The fistula is exposed by simply separating the labia by the fingers, and retracting the perineum by the Marion-Sims speculum. The edges of the fistula are next pared by knives or by scissors adapted for the purpose. These require to be bent at different angles and curves so as to reach easily all parts of the circular space constituting the fistula; as regards the manner in which the paring is effected, the edges should be bevelled, the operator removing thus the mucous coat of the vagina and the muscular tissue of the bladder, but not the mucous lining of the bladder. The effect of this is that the amount of raw surface offered for adhesion when the lips are brought together is increased. Every part of the border of the fistula must be pared. The paring effected, a series of interrupted sutures are introduced; they pass from a quarter of an inch outside the edge of the wound, through the thickness of the muscular coat of the bladder, close to the edge of the cut surface, stopping just short of the mucous membrane; the same on each side. Avoidance of the mucous coat of the bladder is a point insisted on by all. The number of sutures varies according to the size of the opening, but it is a point much insisted on by Dr. Marion-Sims, that they should be numerous and close together. The sutures first used have been generally of silk. When these temporary silk sutures have been all introduced, the ends, which are hanging free, are used to draw through the silver wire permanent sutures. The edges of the wound are then carefully brought together by tightening the sutures one after the other; the ends of the wire sutures are then twisted up close to the edge by the fingers or by forceps, and the wire is then cut off close to the edge of the wound.

In the performance of the operation, care is required to

avoid the ureters; and when the fistula is situated high up, great care and an intimate acquaintance on the part of the operator with the anatomy of the parts are essential.

[To Dr. J. Marion-Sims we owe the successful treatment of vesico-vaginal fistula. Till his day it was wholly incurable. In 1845 he built a small private hospital in Montgomery, Alabama, and gathered in it from the country around, half a dozen young colored women, who were subjects of this infirmity; and instituted a series of experiments on them with the view of testing its curability. And after about four years of incessant work and repeated failures, he finally solved the problem of curing it; and now the operation is performed successfully everywhere.

All the instruments necessary for the operation are of his invention. And so perfect and so simple are they that there is no need for modification or improvement.

They are:

1. The Sims position, the left lateral semi-prone position.
2. The Sims speculum.
3. The tenaculum.
4. The knife.
5. Scissors, curved and straight.
6. The needles and needle-holder.
7. The silver wire sutures.
8. The method of introducing the sutures.
9. The method of securing them.
10. The method of removing them.
11. The catheter.
12. The sponge-holders.

The Sims position for all operations on vagina or uterus has been so often alluded to that it is needless to dilate on it here. The patient is placed on the left side on a table, with the thighs flexed at about right angles with the pelvis, the right drawn up a little more than the left, the body rolled over on the chest, the left hand behind the back, the neck extended, with the left side of the face and left parietal bone flat on the table, or supported by a small cushion or pillow.

When my father began his experiments in 1845, he placed his patients in the genu-pectoral posture for operation, and continued this method till he removed to New York in 1853, when he worked out the left lateral semi-prone position, which surgeons in both the old and new world now call the "Sims position."

The patient, properly prepared and placed in this posi-

FIG. 216.



tion, the Sims speculum is introduced, held by an assistant, and the perineum is pulled back, which opens the vagina

and exposes it fully to view. Fig. 216 shows the manner of holding the speculum when in use.

To illustrate the principles of the operation let us take the simplest case that could occur. Fig. 217 represents a vesico-vaginal fistula in the vesico-vaginal septum, about midway between the urethra and cervix uteri, large enough to admit the end of the finger. In scarification the anterior border is hooked up with a delicate tenaculum, pulled forward, put well on the stretch, and clipped with scissors, straight or slightly curved on the flat, till the whole circumference of the fistula has been freely denuded. The cut surface is bevelled down to the edge of the lining membrane of the bladder, and is about $\frac{3}{16}$ of an inch wide, sometimes more. If the tissue is abundant there is no danger of removing too much. If it is scanty we can get fresh surface enough by simply splitting the vaginal border without removing any tissue whatever. For this purpose, we use a delicate scalpel with a long handle. We sometimes use the scalpel for denudation. But the scissors are generally preferable. We need really but two pairs of scissors, the sharp pointed, slightly curved at the point, for cutting wire, and the gently curved on the flat for scarification.

FIG. 217.

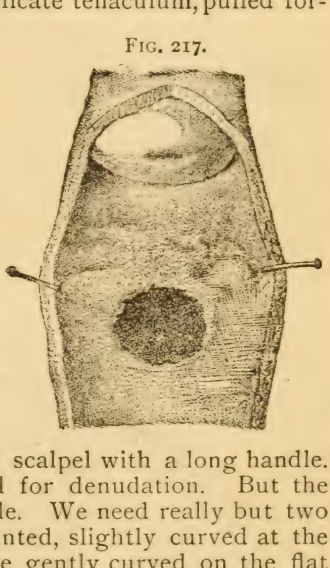


Fig. 218 represents the borders of the fistula after denudation with one suture already introduced, and the beginning of the second. To introduce the suture, hook up the anterior border of the fistula with the tenaculum just at the vaginal edge of the denuded portion, pull it forward, hold it firmly, and enter the needle about $\frac{3}{16}$ of an inch from the outer edge of the scarified part, and push it diagonally through the vaginal septum, and bring the point out at the junction of the vesical membrane with the denudation. The tenaculum (or a blunt hook) is then placed under the projecting point of the needle, to support, elevate, and pull it forward when it is seized with the forceps, pulled through, and drawn out of the vagina. Then

with the forceps pass the same needle through the posterior border of the fistula, entering it at the junction of the vesical mucous membrane with the denudation, and bring the

FIG. 218.



FIG. 219.



point out on the vaginal surface beyond the distal edge of the denuded surface at a point corresponding with its entrance anteriorly. In this manœuvre the posterior edge of the fistula is to be hooked up and steadied with the tenaculum for the introduction of the needle, and then the point of the needle is to be supported by the tenaculum as before, till it is caught and withdrawn by the forceps, as seen in Fig. 219.

FIG. 220.

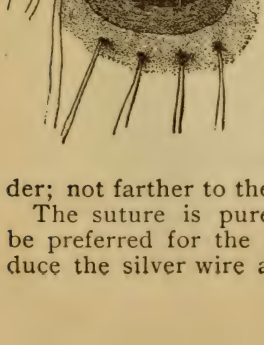
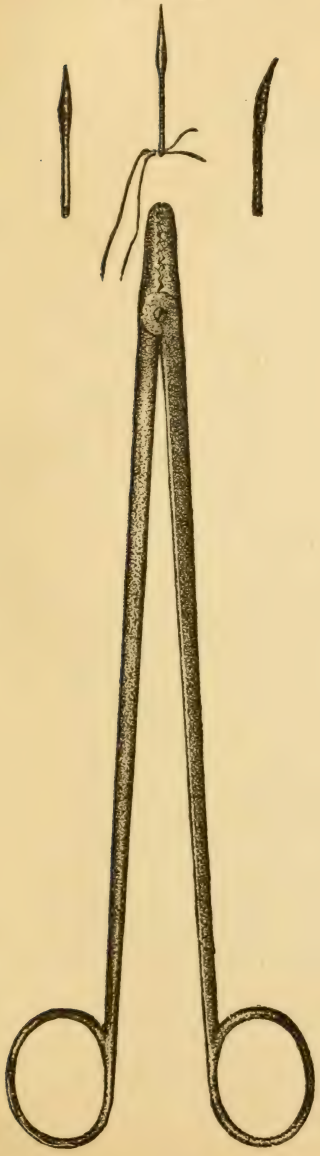


Fig. 220 shows the four sutures introduced, the number required for an opening of the size represented. They are seldom more than $\frac{3}{16}$ of an inch apart. The two outer or end sutures are to be passed, as shown in the figure, just at the edge of the lining membrane of the bladder; not farther to the right or the left.

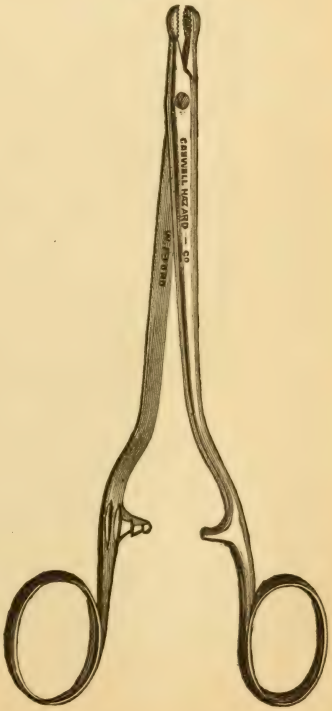
The suture is pure silver wire, No. 28 or 29, as may be preferred for the special case. Some surgeons introduce the silver wire at once. But we prefer to pass first

FIG. 221.



a double ligature, and hook the bent end of the wire over the loop, and then with this draw the wire into position, when all is ready for completing the operation. By this plan the wire never gets kinked or knotted. The needles are about an inch long, and straight, or slightly curved near the point. My father formerly used the spear-pointed needle, but for many years he has had them pointed like the needle of the hypodermic syringe.

FIG. 222.



He formerly used forceps like Fig. 221. But for many years past we use forceps with locked handles. (See Fig. 222.) As we pull on the distal end of the ligature to draw the suture through, there is some danger of its lacerating the tissues, and we often use a fork (Fig. 223*a*) to push up and support the distal end of the thread which glides over it as over a pulley. Suppose all the ligatures have been passed; then bits of silver wire ten or twelve inches long, bent at one end, are to be hooked one over each loop of ligature and securely fastened. The one on the upper or right side of the vagina is to be pulled in place and tightened first. Then the next, and so on till they are all secured. Fig. 224 represents the method of twisting the wire. The wire is caught by lock-forceps an inch or more from the fistula, drawn up perpendicularly from the surface of the vagina, put well on the stretch, and then with the fulcrum (Fig. 223*b*) the anterior half of the wire is pushed back and bent over the line of union and firmly held there, while with the forceps it is pulled in the direction parallel with the handle of the fulcrum. Hold the fulcrum firmly with the left hand while with the right the forceps are rotated till the wire is neatly twisted up to the vaginal surface. Then remove the fulcrum, and cut off the twisted wire about a half or three fourths of an inch from the surface. And, placing a tenaculum or blunt hook against the wire at the junction of the twist and loop, bend the twisted portion flatly down on the surface of the vagina backward, forward, or laterally, as the case may require. Fig. 226 represents two of the wires twisted and bent forward and cut off.

FIG. 223.

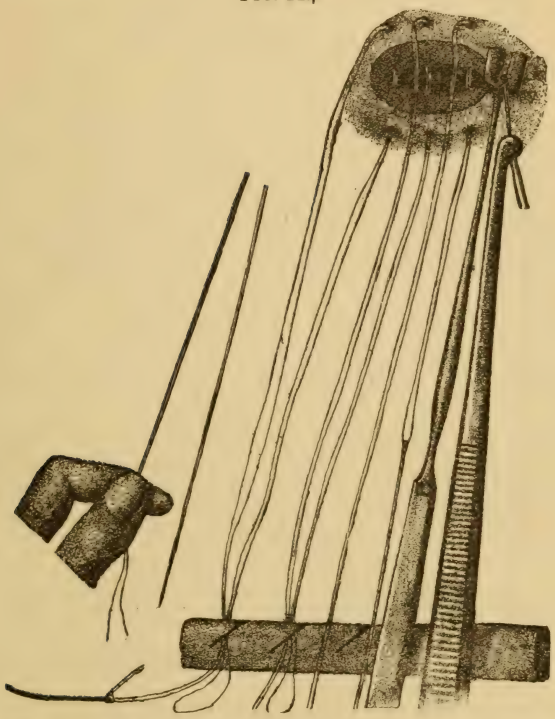


Fig. 227 represents the appearance of the fistula when the operation is completed.

My father has often operated on simple cases like the one now described, and allowed the patients to walk about

as if there had been no operation. I now recall a case of this class which was brought to the Woman's Hospital in 1873, when I was his assistant there. His beds were all full. And there were so many applicants that this poor woman had to be put off indefinitely. The fistula was favorable for cure. So he operated, applying five silver sutures, and

FIG. 224.



sent her home with instructions to return in a week. She attended to her ordinary household duties all this time, and when she returned the cure was found to be perfect, and the sutures were removed. The first time he did the operation in this way was in 1855, the first year of the opening of the Woman's Hospital. The patient, though 56 years old, was perfectly cured. But this is not the plan to be pursued generally. We put the patient to bed, and introduce the

self-retaining sigmoid or Sims catheter. Fig. 228 represents the self-retaining catheter. Instead of this, my father has for many years been in the habit of using a Nelaton catheter cut to the length of three or four inches, or a common piece of rubber tubing of appropriate size and length. It is light and possesses great advantage over the metallic catheter when the urethra is irritable. Of course the catheter when used must be kept clean, and be cleaned daily.

FIG. 225.



The sutures are usually removed on the eight day after operation. This requires some delicate manipulation. The patient is to be placed in the Sims position, and the Sims speculum is to be introduced. Then seize the twisted end of one of the sutures with lock-forceps, and raise it up perpendicularly from the vaginal surface; put it well on the stretch till the loop of wire is plainly seen, then with sharp-pointed scissors (Fig. 229) be sure to pass the point of one blade within the loop, and clip it and pull it out.

It is unfortunate if in a hurry the wire is cut off in the twisted part above the loop. For then it worries the patient if we have to poke about with a blunt hook to bring the loop again to the surface.

When the fistula is longitudinal, of course the sutures are to be passed transversely. And this is done with the same facility as in the first case.

The sutures are to be removed about the eighth day.

The bowels are to be constipated for three or four days. The diet should be moderate, but not greatly restricted.

To cure vesico-vaginal fistula with such facility, and such certainty, and with absolutely no risk to life, is one of the grandest surgical achievements of modern times.]

The after-treatment requires special attention. The patient is placed on the side in bed, where she must remain

for some days. Accumulation of urine in the bladder is generally prevented by keeping a catheter in the bladder, through which the urine escapes, as fast as it enters this cavity, into an india-rubber bag placed outside; or, still better, by an india-rubber pipe, to a suitable receptable beneath. The catheter used is of a sigmoid form; the best is one of flexible metal, which is self-retaining. The cathe-

FIG. 226.



FIG. 227.



ter should be changed night and morning, cleaned carefully before reintroduction, and carefully watched to see that it does not become obstructed. Some operators, as Dr. Meadows, omit this continued use of the catheter altogether, and it is stated that the cases do equally well. The bowels are prevented from acting for a period of ten days or a fortnight, small doses of opium being given periodically for this purpose. The sutures are removed

FIG. 228.



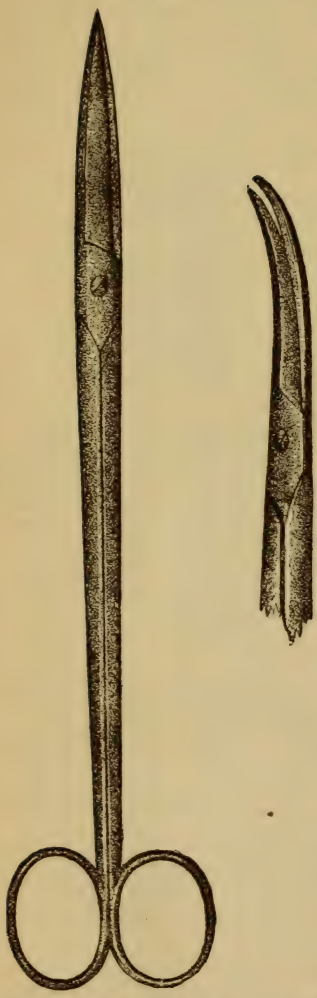
about the tenth day. In removing the sutures, each separate stitch is slightly retracted by the forceps, and then cut across on one side by means of sharp-pointed scissors.

When the base of the bladder is entirely gone, it is necessary to close the vagina completely, the patient afterward menstruating through the bladder.

If the fistulous communication between the bladder and vagina be due to cancerous ulceration or to syphilitic ulceration still progressing, operative measures are quite inapplicable.

The instrument required for the operation must be specially constructed for the purpose. For preparatory operations long, blunt-pointed slightly curved scissors, and the glass plug. For the operation itself the duck-bill speculum in various sizes, or metallic, slightly flexible retractors; tenaculi with long handles, fine points, and slightly hooked in shape at the end; a blunt hook of copper, plated, to act as a probe and otherwise. Scissors (following Emmet's plan) of various curves, right and left, so as to enable the operator to pass all round the fistula, or knives with short blades set on long handles at various angles, or one knife set on a universal ball-socket joint. Short needles to carry silk, of various curves, a holder to insert the needles, or Simpson's self-feeding wire-carrying set of curved needles, with handle before mentioned, may be employed instead of these silk-carrying needles. Sponge-holders with long handles, and furnished each with a minute piece of sponge. A pair of long dressing forceps. Forceps with strong flattened points to twist the sutures; silver wire of various thicknesses. Sims's "shield" of copper plated, which enables the operator to steady the fistula and tighten the sutures. Catheters. Delineations of these various instruments will be found in Dr. Emmet's, Dr. Savage's, and other works.

FIG. 229.



TREATMENT OF RECTO-VAGINAL FISTULA.

These cases do not, as a rule, present the same difficulty in regard to treatment as cases of vesico-vaginal fistula: they are capable of being treated on precisely identical principles. The application of caustic is frequently sufficient to produce closure of the aperture. Careful paring of the edges and use of metallic sutures, can be had recourse to, if other more simple measures fail. The treatment after the operation chiefly consists in keeping the bowels confined, by means of opium, for some days. Fistulæ due to cancerous ulcerations are not remediable by operation.

For the relief of vesico-uterine fistula, the operation of closing the os uteri and allowing the patient to menstruate through the bladder has been practiced. It is perhaps the least of the two evils to leave the patient thus. Mr. James Lane records a most curious case, in which, notwithstanding closure of the os by operation, the patient became pregnant. Probably the closure was not complete. Various interesting and unusual cases will be found in Dr. Emmet's work.

TUMORS GROWING IN OR FROM WALLS OF VAGINA.

Fibroid tumors are sometimes met with in the wall of the vagina. Thus Sir J. Paget * removed by enucleation a hard fibrous tumor, the size of a hen's egg, from the wall of the vagina in front of the os uteri, which had been the cause of profuse losses of blood; and occasionally small growths of a similar nature are found more external to the vagina near the uterus. Again, we have the *fibroid polypus* of the vagina, attached by a pedicle, and hanging freely in the vaginal canal, and the *mucous polypus* of the vagina. These cases are rare.

Fatty tumors growing between the rectum and vagina have been met with.†

Cancer of the vagina presents itself in two forms. We find in some cases cauliflower-like growths on the free surface, generally in association with like growths on the cervix uteri. In others the vaginal wall is found in a thickened,

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* *Med. Times and Gaz.*, Aug. 17, 1861.

† See Dr. D. D. Davis's work, vol. i., p. 137. In the works of Dr. West and Dr. M'Clintock also will be found related cases of the somewhat rare affections above described.

hard, irregular, nodular condition. Any part of the vaginal wall may be affected. Vesico-vaginal fistula is often a result of ulceration of a cancerous deposit in the roof of the vagina.

Treatment of Tumors Growing in or from the Vaginal Walls.—The fibrous tumors growing in the vaginal wall, or hanging by a pedicle from any part of the same, are only amenable to surgical treatment. They interfere with coition, and require removal. The polypoid tumors are best removed by the écraseur. If near the bladder, care should be taken not to wound this viscus in removing the tumor. A more careful operation by the knife or scissors is required when it is decided to remove a tumor which is larger, and has a wider basis of attachment.

The cystic tumors of the vagina, if pedunculated, are treated by excision. When this is not the case, the cyst may be tapped and injected, or it may be dissected from its attachments, if not of considerable size. The latter plan is, on the whole, the best, as the cyst will refill subsequently, when simply tapped. [A sure plan of curing these vaginal cysts is to split them widely open, keep the incised edges apart for a while, and then let them heal from the bottom by granulation.]

In the treatment of cancerous tumors of the vagina, the same rules are applicable as in cases of cancer of the uterus.

CHAPTER LII.

Diseases of the Urethra and Bladder.

Diagnosis.
Disorders of Micturition considered in Relation to the Diagnosis of their Causes.
Diseases of the Urethra and Bladder—Chronic Inflammation of Urethra—Treatment—Stricture of Urethra—Treatment—Vascular Tumors of Meatus—Treatment—Eversion of Urethra and Bladder—Treatment—Retention of Urine—Use of Catheter—Chronic Cystitis—Treatment—Polypus of Bladder.

DIAGNOSIS.

The disorders of the bladder and urethra are numerous, and occasionally very serious in their results. Their diag-

nosis is, though really simple, often attended with difficulty, for the reason that the symptoms are not unfrequently of a very misleading character.

The physical exploration of the urethra and bladder is easy. The urethral orifice can be readily seen, the canal can be easily explored by means of a sound or a catheter, and its patency tested. The bladder can be explored by the finger from the vagina in such a way as to test its thickness and density and the presence of foreign bodies—*e.g.*, calculi—within it. The bladder can also be accurately explored from within by means of the sound or the catheter.

In case of obscurity of diagnosis these several methods of examination should be had recourse to. Very easily recognizable and important conditions frequently exist for a long time in consequence of omission of such examinations.

The *disorders of micturition* constitute the most important of the *symptoms* of diseases of the bladder and urethra. We proceed to consider these symptoms.

MICTURITION DIFFICULT (DYSURIA).

Pain is readily confounded with difficulty, and *vice versâ*.

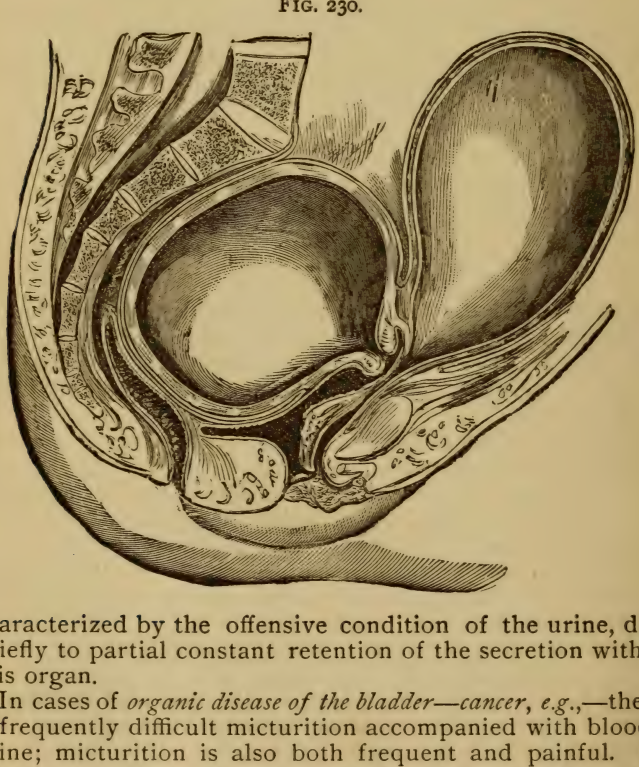
Difficulty in micturition proceeds from one of two causes: either the bladder is incapable of expelling its contents; or, the exit of urine is prevented by some abnormal condition of the urethra.

The *bladder is inefficient* when its muscular fibres are paralyzed, or, which amounts to the same thing, when they do not act. *Paralysis of the walls of the bladder*, in this sense of the term, is not a common affection; it is witnessed in the last stage of low fever—in puerperal fever, *e.g.*,—and it may be the result of long-continued distension of the viscus, whereby the muscular fibres have their contractility destroyed or lessened, as during parturition.

The cause of difficult micturition in cases of this kind would be tolerably apparent, except when the paralysis extended to the sphincter also, when the constant dribbling away of urine would render the distended condition of the bladder less obvious. Some years ago I saw a case of retention of this kind on the second day after labor. The bladder was very full, but the slight occasional escape of urine very nearly obscured the real state of the case. Cases of a more chronic nature sometimes present themselves: the

bladder is largely distended, simulating abdominal tumor, and yet, the escape of urine being tolerably regular, attention is not called to the condition of the bladder itself. Lamentable results have followed under such circumstances from want of correct diagnosis. In cases of paraplegia, there is paralysis of the walls of the bladder, which, however, is more often present toward the close of the affection, the paralysis at first extending, in a marked degree, only to the sphincter. Chronic cases of paralysis of the bladder are

FIG. 230.



characterized by the offensive condition of the urine, due chiefly to partial constant retention of the secretion within this organ.

In cases of *organic disease of the bladder—cancer, e.g.*,—there is frequently difficult micturition accompanied with bloody urine; micturition is also both frequent and painful. In another more rare disease of the bladder, viz., *polypus*, the free passage of the urine may be prevented by the polypus.

Organic Stricture of the Female Urethra.—In cases where the difficult micturition is due to this cause, the difficulty is

more or less persistent, though liable to exacerbations; the bladder is evacuated slowly, the stream is small, pain is at times present, and the difficulty, as a rule, slowly increases as time advances. The history of the case might be of some assistance in the diagnosis; but an examination is of course essential. *Vascular tumor of the urethra*, or *polypus of the urethra*, may be the cause of difficult and painful micturition. In the case of polypus of the urethra, there is difficulty and straining in micturition, and there may be occasional passing of blood. *Cysts or other tumors of the vagina*, if growing near the urethra or neck of the bladder, may produce difficult micturition. *Inversion of the bladder.*—This rare condition will be mentioned further on, in connection with "painful" micturition, but it also occasions "difficulty."

Displacements of the Uterus.—Connected as the neck of the bladder is with the uterus, dislocations of the latter involve a certain amount of displacement of the former. *Retroflexion or retroversion of the uterus*, and especially of the *gravid uterus*, produces difficult micturition in a marked degree. The bladder is emptied with great difficulty in such cases; the urethra, as shown in the annexed drawing (Fig. 230), is thrust upward behind the pubes, elongated, stretched, and pressed upon posteriorly by the uterine tumor. In early pregnancy, difficult micturition, persisting for some time and increasing, would lead us to suspect retroflexion or retroversion—an important fact, for, in order to treat these cases satisfactorily, the early recognition of their true nature is necessary. The other signs of retroversion of the gravid uterus are, flattening of the hypogastric region, involuntary straining or tenesmus, dragging in the loins and groins, constipation, etc.

Enlargement of the uterus, from the presence of *fibrous or other tumors*, may also produce difficult micturition; indeed, this symptom is very commonly observed in various stages of this affection. In cases of fibrous tumor of the uterus, a curious phenomenon is sometimes observed, not, probably, peculiar to these tumors, namely, the manner in which ability to evacuate the bladder is affected by the position of the body. Thus, a lady who consulted me had had a large fibrous tumor of the uterus for seven years. Of late there had been occasional difficulty in micturition, which she had always been able to overcome by lying flat on the face. Here the uterine tumor was movable, and when the patient

threw the body forward the pressure of the uterine tumor was removed from the vesical outlet. Sir C. M. Clarke records a case in which the patient was capable of voiding small quantities occasionally if she lay on the back with the pelvis a little raised.*

During the descent of the fœtal head through the pelvis in labor, there is difficult micturition, the canal of the urethra being partially or completely occluded by pressure.

In *prolapsus of the bladder* (cystocele) the same symptom is observed; the position of the urethra is here precisely the opposite to that in retroflexion of the uterus, the canal being bent downward instead of upward. In these cases of cystocele the patient evacuates the bladder by simply pushing the tumor upward; this restores the urethral canal nearly to its normal position.

Tumors of the ovaries, as long as they remain in the pelvis, frequently occasion great difficulty in micturition; when, in process of growth, they rise above the pelvic brim, the pressure on the urethra is removed, and, so far as the symptom now alluded to is concerned, the patient improves.

In short, difficult micturition may be caused by any tumor in the pelvis capable of exerting pressure on the canal through which the contents of the bladder are evacuated. It is characteristic of most of those cases in which the difficulty of micturition depends on pressure by tumors, etc., within the pelvis, that the difficulty is more or less chronic, and will be found on inquiry to have lasted for some time, unless in cases where the pelvic tumor is of very rapid growth. An instance of the latter exceptional kind we have in cases of *peri-uterine hæmatocele*, where blood rapidly effused in the neighborhood of the uterus forms a considerable tumor, and, in consequence, gives rise to difficult micturition.

MICTURITION PAINFUL.

Here pain, during or in consequence of micturition, is the prominent symptom. There may be difficulty; but the pain attending it is the circumstance chiefly attracting attention.

Micturition may be painful by reason of *abnormal condi-*

* *Op. cit.*, p. 254.

tions of the urine itself, of the bladder, of the urethra, of the vaginal mucous membrane, or in consequence of *dislocations* produced by affections of other adjacent organs..

Urine.—The morbid conditions of the urine alluded to are undue acidity or alkalinity, presence of gravel, mixture of the urine with blood, in cases of Bright's disease, in cases of calculus of the kidney, cancer of the bladder, or from any other cause. If the urine be of an irritating quality, it often produces excoriation of the vaginal outlet.

Bladder.—Cystitis, chronic or acute, is accompanied with pain during micturition, and there is often a great degree of frequency at the same time. In these cases of cystitis, pain is present more or less constantly, as well as during the passage of the urine from the bladder. Cystitis itself may arise from the presence of a stone in the bladder, or from partial or complete retention of urine. In cases of calculus, there is pain on motion and at variable times; the pain during micturition is not considerable, as a rule, but there is generally pain just at the end of the process. The painful micturition in cystitis depends either on the condition of the urine, which is often very irritating, or on the associated inflammation of the urethra.

In *malignant disease of the bladder*, the pain following micturition is a marked symptom, but it is associated with pain at other times also, with frequency of micturition, with turbidity of the urine, occasional presence of blood, etc. The disease in question is rare; the affection with which it would be most liable to be confounded is organic disease of the kidneys. To settle the point, an examination of the bladder would be necessary.

Urethra.—Painful micturition is, in the majority of cases, dependent on morbid conditions of the urethra. In urethritis, whether of specific character or not, there is pain of a burning character (scalding, as it has been appropriately termed), which is more or less constant; but during the passage of the urine it is very intense: micturition is not only painful but very frequent. The suddenness of such an attack is, as a rule, characteristic of the presence of an inflammatory condition of the urethra. The symptoms of specific inflammation of the urethra produced by the gonorrhœal virus are not, however, always characteristic. There is generally great pain in micturition; this pain is of a burning character, and is associated often with a spasmodic contracted state of the sphincter, to which the pain experi-

enced is partly attributable. The presence of a urethral discharge, and the moral evidence attainable, would assist us in coming to a conclusion (see p. 113). In cases of gonorrhœal inflammation of the urethra, the stage of acutely painful micturition does not extend usually beyond two or three days; it attends the outset of the inflammation, but is less marked subsequently. We also find inflammatory conditions of the urethra as the result of mechanical injury, as from masturbation, too frequent or violent sexual intercourse; or the inflammation may be the result of vesical irritation, as in cystitis or calculus.

An obstinate form of chronic urethritis, unconnected with gonorrhœa, has been noticed by Dr. Ashwell and by Dr. M'Clintock, as giving rise amongst other symptoms to painful and very frequent micturition. There is pain also irrespective of micturition, and pain is produced by passing a catheter. The condition appears to be a chronic inflammation of the mucous membrane lining the whole of the canal.

In cases of vascular tumor of the meatus the pain is, as a rule, very severe, so considerable indeed that the patient dreads the process of evacuating the bladder. Painful micturition, extending over a considerable time, in a middle-aged woman, should lead us to suspect the presence of this affection. Examination of the meatus would then be necessary. In children, *eversion of the mucous membrane of the urethra, or inversion of the bladder itself* is in some rare instances a cause of difficulty and pain in micturition.

Another class of cases of painful micturition is that in which the bladder and urethra are unaffected, but, the *ostium vaginæ* being in an inflamed condition, the passage of urine is productive of pain from the contact of the latter with the inflamed surface. Certain forms of leucorrhœa are associated with painful micturition, in consequence of the existence of this inflammatory condition of the outlet of the vagina. When the upper and inner part of the thighs are excoriated by contact with irritating discharges, such as are present in the ulcerative stage of cancerous disease of the uterus, and under some other circumstances, the patient will lead us to infer that there is painful micturition, the pain arising in the latter case also from contact of the urine with a raw inflamed surface. The immediate neighborhood of the outlet of the urinary meatus may be inflamed as the result of masturbation.

Alterations in the position of the uterus, by which the urethra is drawn out of its place, alterations of the bladder itself, or tumor of adjacent organs, may produce difficulty in micturition, as already pointed out. The difficulty is generally accompanied with more or less pain; but the pain is not, as a rule, the prominent symptom, though it may be so in a few exceptional cases. With a little care in cross-examination, it may generally be made out whether the pain or the difficulty came first in order; and this point is of importance in reference to the diagnosis.

MICTURITION FREQUENT.

There is, perhaps, no one diseased condition of the vagina, uterus, bladder, or adjacent organs, which may not, at one time or other, give rise to frequency of micturition, to say nothing of the varying conditions of the urine which may occasion the same phenomenon. Frequency of micturition can hardly, then, be considered as characteristic of the presence of any one diseased or altered condition.

Frequent micturition is often an early sign of pregnancy. During the first two months of gestation in primiparæ it is very generally present. Toward the latter end of pregnancy, also, it is pretty frequently observed. In hysteria, frequent micturition is a symptom often present during the attacks.

Displacements of the uterus may occasion frequent micturition; anteflexion of the uterus almost invariably produces great frequency of micturition; difficulty and pain during micturition may also be produced thereby. *Ovarian* or other pelvic *tumors* occasion frequent micturition, owing to pressure on the bladder, as before remarked. Urinary difficulties are more frequent during the early than the later stages of these tumors; when larger, they rise out of the pelvis, and the patient suffers less. Frequent micturition may be due to *retroflexion of the gravid uterus*. There may be difficulty alone, but more generally difficulty and frequency of micturition are noticed; the latter may alone be observed. *Organic affections* of the uterus, as cancer, fibroid tumor, polypus uteri, or simple hypertrophy, or an inflammatory or hyperæsthetic condition of the organ, may, each of them, give rise to frequent micturition. Pressure on the bladder, and consequent frequent micturition, may be produced by abscess in the cellular tissue between the bladder

and vagina, or by effusion of blood into the peritoneal cavity around the uterus in peri-uterine hæmatocele.

Dysmenorrhœa is often associated with frequent micturition; the tenesmus of the uterus extends to the bladder.

Certain conditions of the bladder itself may give rise to frequent micturition. *Calculus of the bladder, cystitis, cancerous disease of the organ*, the condition known as the "*irritable bladder*," occasion this symptom, which is, moreover, observed in the early stage of the affections in question. The *presence of blood in the urine* occasions frequent micturition, as do also *various disordered conditions of the urine. Irritation propagated from the kidneys*, when these organs are diseased, *or from the rectum*, as when *hæmorrhoids* are present, may occasion frequency of micturition. Cases in which hæmorrhoids disturb the function of the bladder not seldom remain for some time obscure.

Inflammation of the urethra, as in gonorrhœa, or occurring irrespective of gonorrhœa, is a cause of frequent micturition: the urine is then passed in drops, with scalding pain. *Vascular tumor* of the meatus occasions frequency of micturition, distinguished from inflammatory conditions by the long duration of this symptom in the former case.

MICTURITION INVOLUNTARY.

The conditions under which this symptom may be observed are the following:

Fistulæ in the Vesico-vaginal Septum.—In such cases, the patient has hardly the slightest control over the evacuation of the bladder, the urine escaping by the unnatural opening as fast as it is secreted. The formation of these fistulæ is generally connected with the act of parturition; but *syphilitic* or *cancerous* ulceration may be the source of the evil. If the existence of fistula be suspected, the vagina and the bladder must be carefully examined.

There are cases on record in which involuntary micturition was produced by the existence of a *vesico-uterine fistula.* Here the symptoms are very peculiar, but the nature of the case would be easily recognizable on careful study of its history, combined with examination of the vagina. If the urine were seen issuing from the os uteri, this would conclusively determine the question.*

*A most interesting case of this kind is related by Dr. Leishman, in the *Glasgow Medical Journal*, October, 1861. The patient in this instance could only retain urine within the bladder when lying on the side.

At the latter part of *pregnancy* micturition is often involuntary.

Retroflexion of the gravid uterus may occasion great distension of the bladder; and not unfrequently a case of this kind comes before us in this form: The patient complains of involuntary micturition; and, on examination, it is found that the condition really present is one of *retention of urine*, produced by retroflexion; small quantities from time to time escaping, owing to the extreme distension of the bladder. The period of pregnancy at which this distension of the bladder most commonly occurs is the fourth month. The distension of the bladder was supposed by William Hunter to be the cause of the dislocation of the uterus. Dr. Tyler Smith first pointed out that the retroversion (in many cases, at all events) is the primary evil; the fact being, that the retroversion existed before the pregnancy occurred.*

When the bladder is paralyzed partially or entirely, as in the course of fevers, etc., great distension of the organ and *overflow* may occur, as in the case of retroflexion just noticed.

After parturition there is often involuntary micturition for a few days, which may extend to weeks or even longer. The muscular structure of the urethra has in such cases undergone undue pressure and injury during the act of parturition. In women who have large families, the neck of the bladder occasionally becomes thus permanently weakened, and the control over the bladder is subsequently always imperfect.

Tumors of the ovaries now and then produce involuntary micturition; the tumor drags on the bladder, and mechanically interferes with the action of the sphincter.

Great hypertrophy of the nymphæ was a cause of incontinence of urine in a case recorded by Breslau.† Owing to the traction of the enlarged nymphæ, the action of the sphincter was interfered with.

Cicatrization of the vaginal canal, after parturition, was the cause of involuntary micturition in a case under my care at University College Hospital. Here it was supposed for some time that there was a fistula high up. The cutting through the cicatrices necessary to explore the upper part

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* "Obst. Trans.," vol. ii.

† Scanzoni's "Beiträge für Geburtsk." 1858.

of the vagina led to the discovery that there was no fistula, and to the cure.

Cancer of the uterus may extend to the neck of the bladder, and give rise to involuntary micturition, due then to ulceration of the under portion of the urethral canal, or of the bladder itself.

Congenital defect of power over the sphincter of the bladder is very rare, but the possibility of its existence should not be forgotten. Congenital incontinence of urine may be due to *imperfect formation of the urethral canal associated with epispadias*, of which a very interesting case is recorded by Dr. Röser.* The case was that of a young woman, aged 18, who had an incontinence from birth. The clitoris consisted of two parts; the upper and anterior portions of the orifice of the urethra were wanting, and the orifice itself was very large. A cure was obtained by bringing the separated halves of the clitoris together by a plastic operation.

Micturition Impossible.—In cases where the patient is absolutely unable to pass urine, it is evident that there is either an impediment to the escape of the urine from the bladder, or that there is no secretion from the kidneys. In other words, the case is one of *retention* or of *suppression of urine*. In the distinction of these two conditions, it is to be remarked that retention is, as a rule, accompanied by a desire to evacuate the bladder, which is for the most part absent in cases of suppression: the exception is noticed in cases of paralysis of the lower extremities, and some other instances where there is *sensational* as well as *motor* paralysis. Cases are rare in which there is a possibility of taking suppression for retention; but it might prove a dangerous mistake, and it is one more within the limits of possibility, to overlook retention, and set down the condition as one of suppression. Such cases occur in connection with diseases producing great prostration, fevers being the chief of these. The patient may for a considerable time have no evacuation from the bladder; and, the circumstance escaping attention, the bladder is allowed to go on increasing in size. The obscurity of the case is often increased by the fact (previously alluded to) of a small quantity of urine escaping from time to time from the distended organ, and retention all the while persisting to a dangerous degree. The fact that the

* *Würt. Corr. Bl.*, 1861, and Schmidt's "Jahrb.," vol. cxii., p. 47.

patient has expressed no desire to evacuate the bladder must be disregarded; and, after a certain time has elapsed, an examination should be made, in order to ascertain whether the condition is one of retention or suppression. A case is related by L. Vandeweren,* in which a woman believed to be dropsical died from the effects of rupture of the bladder due to retention. The definitive decision between retention and suppression depends, then, upon the results of examination.

After labor the bladder is not seldom left distended for too long a time, owing to the patient experiencing no desire to evacuate it.

Cases in which retention is combined with involuntary micturition have been already disposed of.

Retention produced by inability to evacuate the bladder, coupled with distress and strong desire for the same, may arise from mechanical pressure on the neck of the bladder, of whatever kind. *Fibroid* tumors of the uterine wall, enlargement of the uterus by fluid, *ovarian tumors*, etc. *Retroflexion of the uterus*, or *retroversion* of this organ, when suddenly produced, may also cause retention, which either supervenes suddenly, or is not detected for a long time in consequence of partial escape of the contents of the bladder occasionally taking place. In cases of *prolapsus of the uterus*, retention may occur during the catamenial periods, when the organ is larger and heavier, and in cases of prolapsus of the bladder itself, chronic inversion of the uterus, etc.

Another form of retention, not by any means uncommonly observed, is that witnessed in *hysterical* patients. Retention from this cause is accompanied with a good deal of acute pain in the hypogastrium. The attack is of a more acute character than in the cases before considered. There is generally a history of previous attacks of a similar character. In many cases, the nature and cause of the presumed retention cannot be made out without an examination.

Lastly, there are cases in which no urine is passed because there is none in the bladder. I lately saw a case in which the ureters were occluded by cancer of the base of the bladder, and no urine could pass into the bladder. This kind of *suppression* has been known to be produced by pres-

* Larbaud, "Recherches sur le Catarrhe la Faiblesse et la Paralysie de la Vessie," p. 68.

sure of large ovarian or other tumors on the ureters. Often suppression in the true sense of the word is due to other causes, the consideration of which does not come within the scope of the present inquiry.

CHRONIC INFLAMMATION OF THE URETHRA.

The canal itself is in an abnormal condition: it presents to the finger a hard thickened cord, which may or may not be tender to the touch; the introduction of the catheter may be attended with much pain. In many cases we have urethritis as a consequence of *gonorrhœal* infection; there is in such cases redness and tenderness, and there is a puriform discharge from the urethra, scalding pain during micturition, and bloody urine. Gonorrhœal inflammation of the urethra continuing a long time, occasionally produces a hard, thick condition of the urethra, such as that above described; and, apart from a careful scrutiny of the history of the case, there may be nothing to indicate whether the chronic urethritis be of gonorrhœal origin or not. Frequency and pain in micturition, slight discharge, pain during sexual intercourse—these are the symptoms usually present in these cases.

Treatment.—The treatment of chronic urethritis consists in rest, the use of the tepid hip-bath, avoidance of all sources of irritation, observance of cleanliness, use of astringent lotions, or injection of weak solutions of alum or sulphate of zinc into the urethra itself. Such treatment will be sufficient in simple cases. Of internal remedies copaiba is undoubtedly the most effectual, and it may be recommended to be given in conjunction with other remedial measures mentioned, in all cases, and whether suspected to be of gonorrhœal nature or not. The disease is undoubtedly a difficult one to cure; especially is this the case where a thickened condition of the urethra is present. Great patience is generally required in order to bring the case to a successful issue. The application of nitrate of silver, powdered and diluted with sugar, or in solution, is sometimes necessary, especially in cases where the mucous membrane of the urethra is ulcerated.

STRICTURE OF THE URETHRA.

This is a condition sometimes met with in women. It necessarily occasions difficulty in micturition. By intro-

ducing a probe into the canal, the presence of an obstruction is readily recognized. It is generally traceable to the effects of mechanical injury, as from the pressure of the fœtal head, contusions from instruments during labor, accidental injuries from without, contraction following syphilitic ulceration, or to chronic inflammation associated with gonorrhœa. Sir Henry Thompson * gives an account of the few cases of stricture of the female urethra which have been placed on record by others or observed by himself. He confirms the observations of previous authors that the obstruction is usually met with close to the external orifice of the urethral canal. It may affect the canal for a variable distance.

Treatment.—"In the management of the organic contractions of the urethra," says Sir Henry Thompson, "the use of dilatation, assisted, when necessary, by a division of the opposing part, . . . will generally be sufficient for their removal." The shortness of the canal, and its great accessibility, should render operative measures easy of application.

VASCULAR TUMOR OF THE URETHRA.

The tumor is an excrescence, bright red in color, which grows just within the external orifice of the urethra, varying in size from a pin's head to a hazel nut. It is usually more or less pediculated, and the pedicle may have a length, as I have myself seen, of a quarter of an inch. It consists of an hypertrophy of the mucous papillæ of the part, and the shape and appearance give one the idea of a vegetation growing on the mucous membrane. The tumor may be single or partially divided. The best account of the intimate structure of the tumor was given by Mr. Burford Norman, in the *London Journal of Medicine*, Feb., 1852. The growth is usually possessed of an extreme degree of sensitiveness. The symptoms produced are occasionally very severe, their intensity being out of all proportion to the size of the tumor. The chief symptoms are difficulty, pain, and frequency of micturition, pain in intercourse, pain on walking, etc. The most constant sign is pain immediately after passing water, whilst the last few drops

* "The Pathology and Treatment of Stricture of the Urethra." The Jacksonian Prize for the year 1852. London: Churchill. 2d ed., pp. 379 *et seq.*

are escaping from the bladder. These tumors may give rise secondarily to several other symptoms, and in some cases the symptoms are so indefinite that the diagnosis remains for a long time obscure, more especially in cases where false modesty induces the patient to refrain from giving such an explicit account of her symptoms to the medical attendant as to lead him to make an examination.

Treatment.—The tumor is best treated by carefully dissecting it off from the surface to which it is attached by means of a small scalpel or scissors, and applying strong nitric acid lightly to the cut surface. If a difficulty is experienced in seizing it with the forceps, Dr. M'Clintock's plan of catching it in a loop of thread forming a kind of snare, may be adopted. Other methods of treatment, such as cauterization with nitrate of silver, require a longer time, and are less satisfactory. There is hardly any affection to which women are liable which causes more uneasiness and discomfort, or which is removed more easily. Warty vegetations are sometimes observed growing just outside the meatus. In some cases of this kind which came under my own notice the affection gave rise to very painful pruritus; in others a large crop of warty growths situated in this position had given rise to considerable difficulty and pain on intercourse, and it was found that, in this latter case, the growths were of syphilitic origin. In these cases removal by means of the knife was the treatment adopted.

EVERSION OF THE MUCOUS MEMBRANE OF THE URETHRA

has been noted by Lisfranc, M'Clintock,* and others. In such cases, a tumor of variable size, of a reddish, a dark red, or pale red color, may occupy the position of the urethral aperture. It is easily distinguished from vascular tumor on attentive examination of the relations of the growth, and by the use of the catheter; and unless inflamed and very painful, it is capable of being pushed back and reduced.

Eversion of the bladder is sometimes observed in very young children. It occurs in infants, probably in the same class of cases as that in which eversion of the rectum is noticed, and from a like cause—viz., violent straining dur-

* *Loc. cit.*, p. 236.

ing coughing, or possibly in the dysuria due to presence of ascarides. Dr. M'Clintock refers to a case observed by Dr. Beatty, of Dublin, in a child nearly two years old. The tumor was scarlet, the size of a chestnut, very painful. It was replaced by pressure, and the urethra found to be very large. Mr. Crosse, of Norwich, had related a precisely similar case in a child about the same age, and which was at first considered to be a vascular tumor of the meatus. An operation was about to be undertaken for its removal, when Mr. Crosse discovered the true nature of the tumor. In adults, eversion of the bladder only occurs where fistulous openings are present.

Treatment.—These cases of eversion of the urethra, etc., should be treated by reduction, by rest, and the careful application of lint dipped in cold water as a compress. The retention of a catheter in the bladder has been recommended, but it would seem calculated to increase the irritability of the parts.

RETENTION OF URINE

may result from a multitude of causes (see p. 475). Here it is only necessary to point out the method of relieving the patient under such circumstances.

Warm fomentations frequently enable the patient to empty the bladder, but in many cases the use of the catheter is required.

Mode of Introducing the Female Catheter.—Ease in the use of the instrument is only to be attained by practice, but the operation is usually effected without much difficulty, by one conversant with the anatomy of the parts. The plan to be adopted is the following: The patient to be laid on her back; the operator is to stand on her right side; the right leg is to be flexed, the sole resting on the bed or couch. The operator then, by means of one finger of the left hand, carried from the abdomen over the pubes, ascertains the position of the clitoris, and of the urethral orifice just beneath it, and having done this, the right hand, holding the gum-elastic or silver catheter, is passed under the right leg, and the point of the instrument guided into the urethral canal. The principal thing is to make certain, in the first instance, of the position of the clitoris and urethral orifice; the latter is known by the fact that the vaginal canal is immediately below it. If the finger be introduced

into the vagina, the urethral canal must therefore be in the median line immediately above it.

It is convenient to have a slender india-rubber tube five feet long, attached to the catheter. The urine then flows directly into the receptacle placed on the floor.

In cases where the retention of urine is due to dragging upward of the bladder by tumors of various kinds, and pressure on the urethra, the direction of the urethral canal is much altered. In such cases a gum-elastic catheter should be always used, and care is required in order to avoid injuring the walls of the canal.

AFFECTIONS OF THE BLADDER.

Chronic inflammation of the bladder is an affection which in some shape or other comes before us rather frequently. After parturition, after operations about the genital organs, it is not unusual for the mucous membrane of the bladder to take on an inflammatory action, which at one time results in the exfoliation of the lining membrane, at another leads to chronic cystitis, with constant secretion of a ropy mucus, an ammoniacal state of the urine, occasional passage of blood, great distress and frequency in micturition, pain in the region of the bladder, and other troublesome symptoms. It is important to bear in mind that the symptoms referable to the bladder are frequently really due to morbid conditions of the kidneys, or ureters, or both. Information respecting the diseases of these organs will be found in standard works on medicine and surgery. Incontinence of urine is an affection liable to supervene on labor, when the urethra has been subject to long-continued pressure.

The timely use of the catheter after labor will prevent that destructive *cystitis* which may be produced by inability of the patient to evacuate spontaneously the contents of the bladder. If cystitis be actually present, with fever, pain, and tenderness, leeches may be required. Demulcent liquids should be given, such as barley-water, and all irritant articles of food avoided. Rest is exceedingly important.

Chronic cystitis may be produced by anteflexion of the uterus. I have met with some well-marked cases and have cured them by treating the uterine affection.

In the *chronic* form of the disease, cystitis is best treated

by the administration of the diluted mineral acids; uva ursi and pareira brava are medicines very generally found serviceable, in combination with diluted nitro-muriatic acid. Sir Henry Thompson has introduced the use of a decoction of the underground stem of the *triticum repens*, in cases of chronic cystitis in the male sex, and has found it of very great service in relieving the various distressing symptoms present in such cases. I have found it equally efficacious in the chronic inflammatory affections of the bladder in women. This distinguished surgeon states in reference to the use of demulcent decoctions, infusions, etc., in affections of the bladder, that large quantities are necessary in order that they may prove beneficial. Dr. West speaks highly of the employment of a seton introduced just above the symphysis in cases of chronic cystitis, and I have seen great benefit from counter-irritation in this locality. The general treatment of the patient in these cases is a matter of great importance; some patients require a liberal diet and regimen, while with others the indication is quite the opposite. The pain and suffering present in cases of cystitis must be relieved by opiates, and these require frequently to be given in considerable doses. In the United States the production of a vesico-vaginal fistula has occasionally been had recourse to in order to cure obstinate cystitis. Dr. Pallen * terms the operation "kolpocystotomy." When *cystitis proper* exists he is of opinion that "one remedy only will cure the patient—long-continued and absolute bladder rest. Kolpocystotomy is the only remedy." The opening is to be made by Paquelin's thermo-cautery at a *red* heat only. The surface is *gently and slowly burned* through. If done too quickly, hæmorrhage or closure results. The opening is kept thus for some months or years.

For the relief of incontinence of urine after labor, which may be more or less complete in degree, time is the great remedial agent. Repeated ablutions of the external genitals have a good effect in restoring the lost tonicity of the sphincter of the bladder. As a general rule, tonics are indicated, and the patient is to be encouraged by the hope—generally a well-founded one—that in the end the lost control over the evacuation of the bladder will be regained.

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* *Amer. Journ. of Obst.*, vol. xi., 269.

is a condition which rarely comes under our notice. An instance, recorded by Mr. Birkett, is alluded to by Dr. M'Clintock, of *polypus* arising from the interior of the *bladder* and projecting through the urethra. The case occurred in a child five years old; the polypus grew from the upper boundary of the neck of the bladder, and formed a red mass projecting through the meatus and between the labia. Excision was performed. The child—greatly exhausted at the time—died. Dr. M'Clintock is probably right in thinking that the écraseur would suit such cases best. According to Dr. M'Clintock only eleven instances of this disease have been placed on record.

APPENDIX.

A.

DIFFERENTIAL DIAGNOSIS OF PAINS REFERABLE TO THE INTERNAL GENERATIVE ORGANS, INCLUDING DYSMENORRHŒA.

DIAGNOSIS of NATURE and CAUSE of PAIN REFERABLE to the INTERNAL GENERATIVE ORGANS, INCLUDING DYSMENORRHŒA.—I. Pains associated with Menstruation. II. Pains not associated with Menstruation—General Remarks—Four principal Situations: 1. The Back. 2. The Groins. 3. The Hypogastric Region: (*a*) Intermittent; (*b*) Constant; (*c*) Inflammatory in Character; (*d*) Acute, Intense Sudden Pain; (*e*) Hysterical; (*f*) Bearing-down. 4. Pains in the Lower Extremities —The various Causes of the Pains in these several Situations considered from a Diagnostic Point of View.

PAINS referable to the internal generative organs may be divided into two classes, viz.—(1) Those associated with the performance of the function of menstruation—dysmenorrhœa; and (2) Painful sensations experienced irrespective of menstruation. It may not be possible in all cases to draw an absolutely distinct line between these two classes of cases; but the separation should be made as far as is possible.

I. PAINS ASSOCIATED WITH MENSTRUATION, TRUE DYSMENORRHŒA.

In partial retention the pains are situated in the uterine region, and radiate from this point to the back and loins; they may be, and generally are, very severe, more or less paroxysmal in character, resembling, though on a small scale, the pains of labor, and often go on increasing in intensity until relieved. Coming on suddenly, lasting for a certain time, and then going off, to return again after a few minutes or after a longer interval—such is the character of the pain. The patient may not be entirely free from pain throughout; but the occasional, it may be periodic, exacerbation—this it is which characterizes it. When the pain is excessive, it may induce disturbances of the nervous system of various kinds—hysteric convulsions, agitation, anxiety, palpitations, tenesmus, pain in micturition, etc. Pain attending menstruation and also coming under the head of dysmenorrhœa may extend to the ovarian regions, deep down behind one or both groins, and it usually extends from this spot down the thighs. It may extend to the loins also.

When there is painful menstruation, the discharge appearing scantily, disappearing for a time, then reappearing, perhaps in gushes, and again ceasing—when this condition of things is noticed at successive menstrual

periods, it gives good ground for the suspicion that there is some difficulty in the escape of the fluid, and it will then be necessary to make a vaginal examination, and in certain cases to use the sound also. When coagula having the form of casts of the uterine cavity, or a portion of it, are passed under such circumstances, this is also in favor of the presence of mechanical obstruction.

It is important not to mistake abortion for dysmenorrhœa, and *vice versâ*. In the case of abortion, there has been suppression of the menses for one or more periods; but in dysmenorrhœa there have been usually preceding attacks of similar character, and no suppression of the menses has been (usually) observed. When there has been partial retention of the catamenial fluid, clots are often observed to be passed, accompanied with contraction of the uterus, and pains quite identical with those of labor; and in such cases very careful examination of the substances discharged may be necessary to enable us to distinguish their nature.

In one case which came under my observation, expulsive pains, such as those described above, were found to be due to a clot of blood in the vagina, the escape of which was rendered difficult by the circumstance of the orifice in the hymen being rather smaller than usual.

II. Diagnosis of the various Pains referable to the Generative Organs, not associated with Menstruation.

It is well known that pain at a particular spot is not always indicative of lesion or of appreciable change at the spot in question. The pain is frequently what is termed a "reflected" pain; at other times it is produced by pressure on the trunk of the nerve supplying the painful part.

It very frequently happens that pains of all three kinds exist simultaneously. Thus a fibrous tumor growing in the wall of the uterus may give rise to pain of the three varieties above mentioned, viz., pain in the uterine region itself, pain in the back—the reflected pain—and pain in the lower extremities; the latter due to the pressure of the enlarged uterus on the sacral plexus within the pelvis. So also an ovarian tumor may give rise to pain in the pelvis, to pain around the hips or back, and to pain in the thigh, or leg, or foot.

In the estimate of the causes of reflected pains now under consideration, the disorders of the bladder should also not be forgotten.

There is a class of pains referable to the generative organs, and very frequently observed, which may be conveniently described as "pressure" pains. The nerves which are most liable to suffer from pressure within the pelvis are those issuing from the anterior foramina of the sacral bone, which enter into the formation of the sacral plexus, and which supply also branches to the pelvic viscera. The nerves for a short distance lie close against the sacral bone, only separated from it by the fibres of the pyriformis muscle, and they may, during this part of their course, be compressed by a pelvic tumor against the hard surface of the bone in question. The nerves which are given off from the sacral plexus are, many of them, sensory nerves, and the effect of pressure on these nerves within the pelvis is therefore to produce pain in the skin supplied by the particular nerve so pressed upon. The following are the localities which may be affected in the manner above described: the hip-joint, the labia pudendi, the clitoris, nymphæ, perineum, the back of the coccyx, the

upper part of the inside of the thigh, the back of the thigh below the gluteus maximus, the leg, and the foot. The upper portion of the labia, and the portions of the skin or other parts of the lower extremity not included in this list, are supplied by branches of the lumbar nerves; these latter nerves are not liable to pressure from tumors situated in the pelvic cavity—that is to say, when such tumors are confined to that cavity alone.

It is not in the nature of things that any great regularity should be observed in the relation subsisting between location of lesion, and location of pain thereby produced, many circumstances being likely to modify or affect the result in particular cases.

There are four principal situations in which pain referable to the internal generative organs is experienced by women suffering from disorders of those organs.

They are—(1) The back; (2) the groin, or ovarian region; (3) the median hypogastric region; (4) the lower extremities.

Pain in the back is a well-known sign of uterine disease. But it is not so well known that pain in one or both of the groins is often a sign of uterine disease. That such is the case, however, is very certain, and I am anxious to call prominent attention to it. Formerly a pain so situated was referred to the ovaries, probably in consequence of the ovary being near the spot. I was led to associate this pain with the uterus simply in consequence of the observation recurring over and over again, that patients so complaining were almost invariably found to be affected with anteflexion of the uterus. Latterly I have come to regard this pain as an almost certain sign of the presence of the affection in question, and it has very considerably modified my views as to the share the ovaries take in producing pains referred to the region in which the ovaries are situated.

I. PAIN IN THE BACK

is one of the most common symptoms in women laboring under uterine or allied disorders. The pain here alluded to usually affects the lumbar and sacral regions and the parts adjacent; it is not an acute pain, but an ill-circumscribed, aching sensation, very wearying, and often extremely distressing to the patient. The intensity of this pain is not by any means proportionate to the severity of the disease.

One of the most common causes of pain in the back is flexion of the uterus. Retroflexion is particularly associated with it, but anteflexion is very frequently the cause of it. Again, in quite exceptional cases, these flexions may be unattended with back-pain. Pain in the back generally also attends expulsive action of the uterus from *whatever* cause that expulsive action may originate. Dilatation of the os uteri is generally attended with it. Pain in the back is not necessarily indicative of disease of the generative organs, but the fact that a patient has for a considerable period suffered from such pain should induce the practitioner to consider whether disease of the internal generative organs, up to that time overlooked, be not present, and to take measures for satisfying himself on this point. The connection between the pain in question and uterine or other internal disorder is often substantiated by the fact that before, during, or immediately after the menstrual periods, it is most troublesome; sometimes, indeed, it is only present at such times. The pain of ordinary lumbago is the most likely to be confounded with it. Attacks of lumbago are, however, more acute in character, and they

occur irrespective of the menstrual periods. Diseases of the vertebræ, aneurism, diseases of the kidneys, etc., are some not uncommon causes of persistent aching or pain in the back.

2. PAINS IN THE GROINS.

A pain felt in the groins is most commonly due to *anteflexion of the uterus*. That this is a fact I am convinced by very numerous observations. Anteflexion does not invariably produce such a pain, but it does so in nine cases out of ten. The pain is a wearing, more or less constant one, increased by motion, sometimes only produced by motion, generally confined to one side, but not always.

In some few instances a settled, fixed, constant pain is present in the anterior part of the abdomen, rather higher up than the groin, and nearly on the level of the umbilicus. Such a pain I have met with, and traced its connection with *retroflexion* of the uterus. Some most remarkable instances of this have occurred to me in private practice, the pain ceasing instantly on removal of the cause. As a rule, retroflexion gives rise to pain in the back rather than the front part of the abdomen, but these exceptional cases do occur. Formerly such cases would have been termed "hysterical."

Ovarian pain, referable to the ovaries, and situated deep down sometimes in the inguinal or iliac region, is observed in some few cases, but they are few compared with that in which the pain is due to alterations of the uterus itself, as above explained. It may be due to interrupted or "disappointed" (to use Dr. Farre's words) ovulation, which may be likened to the aching caused by distension of the testicles, or be due to chronic inflammatory action in the follicles themselves. In a few cases the pain is a kind of neuralgia of the part without inflammatory action. It may be due to *sexual irritation*. Undue sexual irritation in the male is accompanied by aching and pain in the testicles. This pain seems to be comparable with it.

Another cause of ovarian pain, to which attention has been directed by Bernutz, and De Meric,* is gonorrhœal infection. An inflammatory action appears to be set up in the ovary, or in the peritoneal membrane near the ovary, in some cases of gonorrhœa, analogous to the orchitis witnessed in the male.

A variety of this form of pain was described by Dr. Rigby as being indicative, together with other signs, of a displacement—a kind of prolapsus of the ovary. The pain alluded to is "a peculiarly sickening pain about the sacral region, extending to one or other of the groins, and coming on in paroxysms of such agonizing severity as to render the patient frantic with the intolerable suffering.† The pain is greatly aggravated by passage of the fæces; the part in the vagina corresponding to the ovary is tender to the touch. "It bears a close resemblance to the intense and peculiar sufferings in a case of orchitis." Further, says this author, "the menstrual periods are always attended with greatly increased suffering." I have not met with such cases, unless in association with severe retroflexion of the uterus.

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* *Lancet*, June 14, 1862.
† "On Diseases of Women," p. 278.

3. PAINS IN THE HYPOGASTRIC REGION.

The pains due to uterine diseases are frequently situated in the central hypogastric region. For diagnostic purposes we may consider—(*a*) Intermittent pains; (*b*) pains more or less constant; (*c*) pain of inflammatory character; (*d*) with symptoms as of perforation; (*e*) hysterical pain; (*f*) bearing-down pains.

(*a*) *Intermittent Pains.*

The most characteristic and most interesting, from a diagnostic point of view, are those pains which may be termed *labor-like pains.* The pains in question are peculiar in their nature; they come on in paroxysms, lasting a certain time, and leaving the patient pretty free during the intervals; and they are due to contractions of the uterus, generally excited by the presence of some body, substance, or fluid, within this organ. Under certain circumstances, it appears that pains very closely resembling these may be produced by the contractions of the vaginal wall itself, as in cases of clots of blood or foreign bodies in this canal. In most of these cases, uterine contraction is associated with the vaginal contractions in such a way that the latter element in the phenomena is unrecognized.

The typical "labor-pain" is that observed during parturition at full term, where the uterine contractions are most severe and most powerful.

In *women who have never menstruated*, the presence of hypogastric pain of the kind in question should make us suspect closure of the hymen, of the vagina, or of the os uteri, and that the menstrual fluid, although secreted, could not be expelled. As month after month passes without relief, they become more severe, and are finally of the most intense character. The enlarged uterus is usually then to be felt above the pubes.

In *women who have menstruated*, hypogastric pain recurring at intervals, sharp while it lasts, and leaving the patient free from pain in the intervals of the paroxysms, may be due to *abortion.* If the patient had passed over one or more periods without menstruating as usual, and if the pains above described were accompanied by a discharge of blood from the vagina, this would render the suspicion of abortion so strong as to necessitate not only an examination *per vaginam*, but also a careful inspection of the matters discharged.

Respecting an abortion taking place at four, five, or six weeks, it would be exceedingly difficult for the practitioner to affirm positively that the case was one of abortion, unless he were fortunate enough to secure the ovum itself.

Menstrual Retention occurring subsequently to more or less Regular Performance of the Menstrual Function.—In these somewhat rare cases, generally due to closure of the os uteri, labor-like pains may be present.

In cases of *peri-uterine hæmatocele*, labor-like pains are usually observed, either preceding the occurrence of the hæmorrhage, or produced by the pressure of the hæmorrhagic effusion in the pelvis.

Presence of blood-clots fibrous polypi, retained portions of placenta or fœtal membranes, degenerated (*e.g., hydatidiform*) *ova*, within the uterus. The uterus appears to be very capricious in regard to tolerance of bodies within it: large polypi are sometimes found in the uterus, which have given rise to comparatively little pain; while, in other cases, the patient may have been tormented almost daily by severe colic-like pains in the

hypogastric region from a comparatively small growth of the same nature.

Tumors Growing in the Substance of the Uterus.—Of these the fibroid tumor is a frequent source of pains of the kind now under consideration. The pains are most severe when the tumor is so situated as to impede the escape of fluid from the uterine interior. In cancer of the uterus, labor-like pains are frequently present, especially at an advanced stage of the disease.

Collections of Puriform or other Fluid in the Uterine Cavity.—In women suffering from chronic *flexions*, when the canal of the cervix is not so large as to allow a free passage of the fluid secreted, the uterus sometimes becomes distended with serous or puriform fluid, and labor-like pains supervene. This retention of fluid in the uterus in association with flexions is by no means uncommon. The discharges may in such cases be *offensive*. Such retention may occur when the uterus is *dislocated* from its normal position by tumors in the ovaries, etc. These labor-like pains are then also noticed.

Intestinal Irritation, e.g., Dysentery.—Pains due to this cause, and simulating the labor-like pains above described, may give rise, at all events at first, to obscurity in the diagnosis. The pains produced by lead-poisoning, and known as *colic*, could hardly be confounded with those of uterine origin.

Neuralgia of the Uterus.—In a lady whom I had attended for some years, the subject of occasional severe neuralgia, the neuralgia was frequently accompanied by what she herself termed "labor-pains." The pains in question were temporary, and subsided when the neuralgia had located itself elsewhere. Cases where such pains are more persistent are described by various authors as *rheumatism of the uterus*. Some of these cases are possibly really due to fibroid tumors.

Retention of Urine.—That this condition may give rise to labor-like pains the following case, the particulars of which were kindly furnished me by Dr. Leonard W. Sedgwick, will show: He was called to a young woman who was supposed to be in labor. In the abdomen was felt a tumor the size of a nine months' uterus; the patient was apparently in strong labor; violent bearing down pains, with only a short interval, were observed. The woman denied pregnancy, the tumor was found to be elastic, and no fœtal limbs or body could be felt. Dr. Sedgwick tried the catheter and removed an incredible quantity of urine from the bladder. The straining efforts of the patient to evacuate the bladder gave rise in this case to "labor-like pains in very great perfection."

(*b*) *Pains more or less constant.*

These may occur in all degrees of intensity, and the causes of the same are so numerous as almost to defy classification.

In *cancer of the uterus*, severe hypogastric pain, which is generally remittent in character, accompanies almost constantly the more advanced stage of the disease; whereas at an earlier period in the history of the affection the pain is not so severe, and is more generally situated in the back. The "lancinating" pain which has been considered by some authorities as an early sign of cancer is correctly described by Dr. Rigby as "a sudden sharp burning dart of neuralgic severity, always proceeding from one spot, and sometimes transfixing the whole pelvis." But when hæmorrhage, offensive discharges, and pain of the kind now

described are all present together, a careful physical examination of the uterus is necessary; for there is a presumption that the case is one of cancer. Hæmorrhage and pain are sometimes entirely absent.

In *fibrous tumor of the uterus*, there may be severe hypogastric pain.

Flexions of the uterus frequently occasion pain in the hypogastic region.

Neuralgia of the Uterus.—It is rare for the uterus to be the seat of pain unless afflicted with flexion or some organic disease. The cases which were formerly designated cases of "irritable uterus" are otherwise explainable. (See Chapter XVII., p. 163.)

Disease of the Bladder.—Pain more or less persistent, and of a dull aching character, is observed where the bladder is inflamed—*cystitis*—the symptoms varying according to the intensity of the inflammation present. The function of micturition is always disordered in such cases, there being generally great irritability of the bladder, and consequent frequent and painful micturition. The cystitis may be idiopathic, it may be due to disease—*e.g.*, calculus of the kidney—it may be secondary to diseases of the uterus, or it may be due to *malignant disease* situated either in the uterus or in the walls of the bladder itself. In some cases the sufferings experienced by the patient, and due to cystitis, are very severe. As a rule, the disturbances in the function of micturition associated with this disease, render the diagnosis of the affection easy, but the disturbances in question do not necessarily point to the conclusion that the bladder is actually inflamed. The condition of the urine itself should be carefully inquired into, there being usually a large quantity of ropy mucus in cases of cystitis.

(*c*) *Pain of Inflammatory Character.*

Under this head are included all cases in which the ordinary signs of inflammation are present—pain, more or less acute in character; heat and throbbing; tenderness to the touch; feverishness; quickness of pulse, etc. These symptoms are often preceded by the occurrence of a rigor. They indicate inflammation of the uterus, of its peritoneal covering, or of some of the adjacent viscera or their coverings; and they are most commonly the consequence of labor, of abortion, of sudden disturbance of the menstrual function, or of operations about the genital organs. A frequent result in such cases is formation of *pelvic abscess*. Hæmorrhage into the peritoneal cavity, from whatever cause, may give rise to severe peritonitis and pain. An important class of cases is that in which inflammatory action is set up in the interior or on the surface of ovarian cysts. In a woman the subject of ovarian dropsy, sudden access of pain of this kind would excite suspicion that there was inflammation of the cyst. Acute inflammation of the bladder is a condition giving rise to hypogastric pain of the kind now under consideration.

An error liable to be committed is that of taking for inflammation a reflected pain, such as is observed in cases of so-called "hysterical" character. The pulse is the best criterion. In cases otherwise closely simulating actual peritonitis, or inflammation of the uterus, or of the adjacent organs, the frequency of the pulse in the latter affection is wanting.

An important class of cases is that in which

(d) Pain of an Acute and Intense Character is suddenly felt in the Hypogastric Region,

accompanied by great prostration, and depression and shock to the system generally. Fainting, continuing for a considerable time and frequently recurring, great pallidity of surface, cold clammy perspiration, weakness or almost complete absence of pulsation at the wrist, a feeling of sickness or violent and uncontrollable vomiting, are symptoms often witnessed in this class of cases. To these is usually added considerable swelling of the abdomen.

The symptoms in question are such as to excite suspicion of perforation or rupture of some of the abdominal or pelvic viscera, with consequent escape of blood or contents of the ruptured viscera into the peritoneal cavity, or rupture of an abscess and effusion of pus into the peritoneum, from bursting of an ovarian cyst, etc.

The conditions which may give rise to the alarming symptoms above described will now be enumerated.

The pain may be produced by an affection of the abdominal or of the pelvic viscera, and there are no signs by which it can be absolutely determined at the moment whether the seat of the accident be in the abdomen or in the pelvis proper. The concomitant circumstances generally enable us to decide this point, or the course of the case determines the diagnosis in this particular.

In *perforation of the intestine*, as from typhoid fever, from tuberculous ulceration, or connected with organic disease of the abdominal viscera, etc., the previous history would generally suggest the proper interpretation of the symptoms; and the pain is more usually, perhaps, referred to the umbilicus, or a point above it, than to the hypogastric region.

Certain conditions of the pelvic viscera, especially, are capable of giving rise to the symptoms in question. The following are the most important of these:

Pelvic Hæmorrhage from the Ovaries, Fallopian Tubes, etc.; including Cases of Peri-uterine Hæmatocele.—The accident mostly occurs during or immediately after the occurrence of a menstrual period. It may happen in women previously healthy, but is more generally observed in women who are anæmic, and in whom there have been menstrual irregularities (see Chapter XL., p. 570). Walking a long distance, straining, the act of intercourse, or sudden muscular effort, may precede the attack; it may occur also without such apparent exciting cause. The symptoms observed in such cases vary in degree of intensity; there are reasons for believing that, in a slight form, the accident is rather common, and, the symptoms being less severe, its true nature escapes recognition. When symptoms of the above kind occur in an intense degree, and in a woman who has been subjected to the foregoing influences, it may be suspected that they are due to a sudden outpouring of blood. The diagnosis is established by recognizing a semi-solid tumor above the pubes, or pressing on the vaginal walls—the effused blood—such tumor having been before wanting.

Hæmorrhage in Extra-uterine Pregnancy.—There is an important class of cases, in which an outpouring of blood takes place in connection with extra-uterine pregnancy. The hæmorrhage due to extra-uterine pregnancy may give rise to the formation of a tumor in the pelvis, of the same kind as that witnessed in pelvic hæmorrhages of other kinds, the suddenly occurring violent pain and the extreme degree of syncope being

the most significant. Here the patient is usually known or suspected to be pregnant. There may have been nothing about the case to excite particular attention; but more generally the woman has experienced unusual pains, or more discomfort than in an ordinary pregnancy. Slight occasional losses of blood are frequently observed in these cases of extra-uterine pregnancy, which are, under such circumstances, often mistaken for return of menstruation. The rupture occurs in the third or fourth month, or earlier in the majority of cases, when the ovum is in the Fallopian tube; it is rare that it is postponed much later than this. On the other hand, the time of rupture may be considerably later than this, if the ovum be attached just without the tube, or in the abdominal cavity itself; and there may be no rupture at all, the pregnancy going to full term, with further results, which need not be particularly alluded to in this place. Rupture of the fœtal-containing cyst generally occurs when the fœtus is developed in the Fallopian tube; but in cases of extra-uterine pregnancy of the "abdominal" kind, rupture is, on the contrary, rare. The hæmorrhage which takes place in cases of extra-uterine pregnancy is generally so great as to kill the patient, and death often takes place very quickly. In some cases the patient lives longer, and dies apparently from the effect of a succession of hæmorrhages.

Rupture of the Gravid Uterus Itself.—There are a few cases on record in which this accident has happened, and without any very obvious cause. The third, fourth, and fifth months are the various periods during which this has been observed. The symptoms noticed at the time of the rupture would not essentially differ from those in rupture of an extra-uterine pregnancy, but the previous history of the cases might be somewhat different.

Rupture of ovarian cysts, with escape of their contents into the peritoneal cavity, does not, as a rule, give rise to marked disturbance; in some cases, however, when, concurrently with the rupture, there is hæmorrhage, severe symptoms may be produced, more or less identical with those described; and even without hæmorrhage occurring, the escape of the contents of such cysts may give rise to severe symptoms and death. Thus, in a case recorded by Dr. Gillespie, an ovarian dermoid cyst, containing hair and pus, burst; the pus was effused into the peritoneum, and the case speedily proved fatal. In this instance, the symptoms were, for a few previous days, diarrhœa, occasional vomiting, abdominal pain. These, especially the vomiting, became suddenly aggravated, and death took place in a few hours, from collapse. The symptoms closely resembled those due to irritant poisoning.*

(*e*) *So-called Hysterical Pain.*

It is well known that the abdomen is very frequently the region in which pain is seated in cases of so-called hysteria. From other pains seated in the hypogastric region, hysterical pains are discriminated by careful inquiry into the history of the patient, when previous occurrence of hysterical symptoms is substantiated, and by the absence of signs of inflammation or mischief of other kinds. The character of the pain offers in itself no conclusive indication, for hysterical pain may resemble in degree and intensity almost all other varieties of pain. In most of such cases, the patient is the subject of chronic flexion of the uterus.

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* *Edin. Med. Journ.*, May, 1862.

(*f*) *Bearing-down Pains.*

In women suffering from chronic disease of the uterus, complaint is often made of what are called *bearing-down pains*. They more frequently occur in women who have lost flesh and who are in a bad state of health, and in whom the uterus is diseased. Diseases of the uterus involving change of shape or position of the organ cause them more particularly, anteflexion of the uterus very commonly so. In some cases where bearing-down pains are present there is partial or complete prolapsus of the uterus or of its cervix. The bearing-down sensation is also present in cases where tumors of the uterus, pregnancy, polypi or fibroid tumors, cancer, etc., exist. It may be due to prolapsus of the bladder. Pains of this character generally point out the necessity for exploration of the uterus from the vagina.

PAIN SEATED IN THE LOWER EXTREMITIES.

It has been already explained how and why it is that tumors or enlargements of various kinds of the organs within the pelvis may give rise to pains situated in certain parts of the lower extremities. These pains have a mechanical origin, and there is consequently no sign by which we can distinguish, by means of the pain alone, the nature of the substance that is exercising the pressure which is the cause of the pain. The "pressure" pains are very important, however, in directing attention to tumors in the pelvis which might be otherwise overlooked. I have several times noticed pain of this kind in *early pregnancy*, and the occurrence of the pain attracted attention to the possibility of the presence of a tumor in the pelvis. In cases of retroflexion of the uterus, pain of this kind is a very common occurrence.

The pain frequently felt at the upper and inner part of the thighs and in the perineal region, in cases of *ovarian tumor*, is an instance of the same kind. Painlul cramps are occasionally experienced in the calves of the legs, in cases where pelvic tumors are present. Cramps of this kind are frequently observed in labor, and these appear to be due to pressure of the hard parts of the fœtus on the sacral nerves. Pains situated in the anterior and other parts of the thighs, which regions are supplied with nerves from a different source, do not indicate a pelvic tumor. To this rule, however, there is an exception occasionally witnessed in cases of *pelvic abscess*, where the tumor rises up above the brim of the pelvis, and gives rise to pressure on certain branches of the lumbar plexus of nerves as they pass with the psoas and iliacus muscles from the abdomen to the thigh. Pain at the outer part of the thigh is not rarely a marked symptom in cases of pelvic abscess. Another symptom frequently noticed under these circumstances is painful contraction of the thigh, with inability to extend the limb.

In the majority of cases, the pains felt in the lower extremities belong to the "pressure" class.

Lastly, it must be remembered that there are many conditions capable of giving rise to pains in the lower extremities, quite unconnected with diseases or derangements of the generative organs. The following case may be mentioned as showing how irritation or injury within the pelvis may occasion pains elsewhere: A lady had been operated on for stricture of the cervix uteri upwards of a year previous to my seeing her. She was then suffering from severe pain in the groin and pain in walking.

The whole of the upper and inner part of the left thigh, the external part of the thigh, the gluteal region, the crista ilii and the left side of the sacrum were found very tender and acutely sensitive. Pelvic abscess was feared. After three months' rest the extreme sensitiveness still remained and localized in the same spots, but there was no evidence of formation of pus. This case was one of reflected pain, the primary cause being probably injury of a nerve in the operation.

B.

DIFFERENTIAL DIAGNOSIS OF PELVIC TUMORS AND ENLARGEMENT OF THE UTERUS, INCLUDING PREGNANCY, BY DIGITAL EXAMINATION OF THE VAGINA.

Enumeration of Tumors felt through the Vaginal Walls, and Summary of Diagnosis—Distension of the Bladder—Calculus of the Bladder—Distension of the Rectum by Fæces—Cancer of the Rectum—Retroversion and Retroflexion of the Unimpregnated Uterus—Retroversion and Retroflexion of the Gravid Uterus—Anteversion and Anteflexion of the Uterus—Fibroid Tumors growing from, and in, the posterior part of the Cervix Uteri, or from the Uterus itself—General Enlargement of the Uterus from whatever Cause—Pregnancy—Enlargement of Fallopian Tube, due to Distension by Serous or Purulent Fluid, by Blood, and Fallopian Pregnancy—Abdominal Pregnancy—Blood Tumors of the Pelvis (Peri-uterine Hæmatocele)—Ovarian Tumors; Diagnosis of the smaller and of the larger Ovarian Tumors from other Pelvic Tumors—Cysts of Broad Ligament (Wolffian Cysts)—Hydatid Cysts—Pelvic Cellulitis and Abscess—Osseous or other Solid Tumors growing from the Pelvic Walls.

It is here intended to consider the diagnosis of tumors situated in the pelvis around the vaginal canal, and there perceivable by the finger.

In Chapter III., p. 60, vol. 1, will be found particular directions for placing the patient in a favorable position for examination. Attention to these particulars is imperative.

The points to which it is necessary to direct attention are—the degree of resistance imparted to the touch, the presence of fluctuation, the mobility or fixed character of the tumor, its size, shape, and relation to the uterus, the presence of inflammatory signs, tenderness, puffiness, or swollen condition of the parts with which the finger is brought into contact. When by careful observation we have obtained a good idea of the physical conditions of the tumor, the diagnosis is not a matter of much difficulty, unless in very exceptional cases. In many cases it is necessary, in order to complete the diagnosis, to conjoin with the vaginal examination an examination of the abdomen.

A tumor felt through the walls of the vagina on digital examination may be caused by—

Distension of the bladder.

Calculus in the bladder.

Distension of the rectum by fæces.

Cancer of the rectum or posterior part of the uterus.

Retroversion and retroflexion of the unimpregnated or gravid uterus.

Anteversion and anteflexion of the uterus in the non-gravid or gravid state.

Fibroid tumors growing from, and in, the posterior part of the cervix uteri, or from the uterus itself.

General enlargement of the uterus, from whatever cause, including pregnancy.

Enlargement of Fallopian tube, due to distension by serous or purulent fluid; or by blood, and extra-uterine pregnancy.

Blood tumors of the pelvis (peri-uterine hæmatocele).

Ovarian tumors, also enlargement or congestion of the ovary.

Cysts of the broad ligament (Wolffian cysts).

Hydatid cysts.

Pelvic cellulitis and abscess.

Osseous or other solid tumors growing from pelvic walls.

The tumors, which may be *felt equally on all sides*—that is to say, which are not felt exclusively in one or other position—are the following: Enlargement of the uterus; peri-uterine hæmatocele; pelvic cellulitis; ovarian tumors; extra-uterine pregnancy; fibroid tumors. Ascitic distension of the peritoneum should perhaps be added to this list, although there is no tumor in the strict sense of the word in such cases.

The tumors which are felt exclusively *behind* the os uteri are: Distension of the rectum by fæcal matters; cancer of the rectum; retroversion or retroflexion of the uterus; gravid or non-gravid.

The tumors which are felt usually, but not exclusively, *behind* the os uteri are: Ovarian tumors in their early stage of growth; distension of the Fallopian tube by fluid of any kind; Fallopian pregnancy; Wolffian and hydatid cysts.

The tumors felt exclusively *in front* of the os uteri are: Calculus in the bladder, distension of the bladder with urine, anteversion and anteflexion of the uterus.

If for the word "behind" the word "laterally" be substituted, in the foregoing summary, the account given will still be true, for those pelvic tumors which are lateral are generally also posterior to the uterus, and *vice versâ*.

This short statement may serve to indicate the more prominent characteristics of the tumors included in the foregoing list. The several conditions in question will now be considered in detail, and their diagnostic peculiarities pointed out.

Distension of the bladder is more particularly observed when there is prolapsus of the uterus. In such cases the bladder may be partially protruded as far as, or beyond, the vaginal outlet. The softness, the presence of fluctuation, its position, and the fact of the tumor disappearing on using the catheter, are characteristic.

A stone in the bladder is readily felt through the lower wall of the bladder, by the finger introduced into the vagina; and the size and shape of the calculus or calculi can also be made out by this method of examination: an examination of the interior of the bladder, by means of the catheter or sound, would substantiate the diagnosis.

Distension of the Rectum by Fæces.—In this case a tumor is felt behind and through the vagina, in the position which the rectum is known to occupy. The distension is sometimes considerable, and the tumor very large. It is hard and irregular, and its shape is identical with that of the

rectum. Such a tumor it is hardly possible to confound with anything else. [A rectal touch completes the diagnosis.]

Cancer of the Rectum.—There may be felt behind the vagina, in such cases, a hard, irregular, nodulated tumor, evidently belonging to the rectum, and which may or may not be the seat of pain and tenderness on pressure. The cancerous mass may, and usually does, produce stricture and accumulation of fæces in the tube above, but very frequently there is a constant diarrhœa. It may be necessary to unload the rectum by means of enemata, to ascertain the position and relations of the cancerous tumor. This malignant disease may be found to have extended to the vagina itself, at its upper part, or it may appear to be an extension from the back of the uterus. The thickening of the vaginal walls, its adhesion to the parts beneath, and its continuity with the morbid and painful enlargements around the rectum, indicate its nature. Cancer of the encephaloid variety has in some rare cases been known to grow from the recto-vaginal septum, project into the vagina, and appear as a tumor between the nymphæ. Examination of the attachments of the tumor would clearly indicate its origin, as distinguished from tumors growing from, or connecting with, the cervix uteri.

Retroflexion or retroversion of the unimpregnated uterus is readily distinguished by the tumor forming part of the uterus, and by the use of the sound. It is most likely to be confounded with fibroid tumor growing from the back of the uterus.

Retroflexion of the Gravid Uterus.—Here the tumor may be of considerable size, the os is high up and difficult to reach, the patient is generally known to be pregnant, and the tumor has a softer feel than is communicated by a fibroid tumor in the same position. (See p. 378, vol. i.)

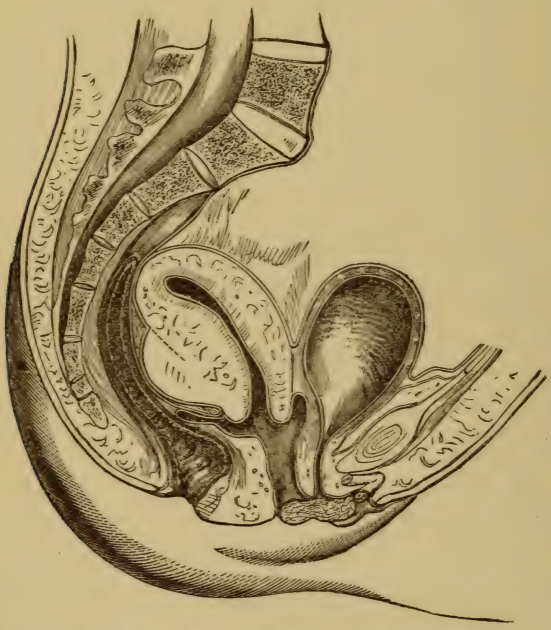
When the gravid uterus constitutes the tumor, the symptoms usually show themselves with great intensity, and quickly. The use of the sound would of course clear up all doubts, but unless the case be clearly not one of pregnancy, this instrument must not be had recourse to. An ovarian tumor does not effect such an amount of dislocation upward of the os uteri as is witnessed in the other case. From extra-uterine pregnancy, in which also a tumor may be present behind the upper part of the vagina, it is to be distinguished by the continuity of the tumor with the uterus, also by the non-symmetrical shape of the tumor in extra-uterine pregnancy. From fluid or bloody distension of the Fallopian tube, and from Fallopian pregnancy, the tumor due to retroflexion of the gravid uterus is also to be distinguished by its central position, its greater firmness, the continuity of the tumor with the cervix, etc.

Another condition with which retroflexion of the gravid uterus may be confounded is retroflexion of the unimpregnated uterus, accompanied with hypertrophy of the fundus and of the uterus generally, and with or without development of fibrous growths in the posterior uterine wall. Retroversion of the uterus with a fibrous tumor or tumors growing in its posterior wall, suddenly occurred to a patient who came under my notice with enormous distension of the urinary bladder. Here the effect was pretty much the same as if the uterus had been enlarged from pregnancy and had become suddenly retroverted. The greater elasticity, smoothness, and regularity of a tumor constituted by the impregnated uterus would, however, be the distinguishing character of the one, as the hardness, firmness, and resistance would be the distinguishing characters of the other condition.

In endeavoring to make out the diagnosis of a case of retroflexion, the examination by the rectum is of great value.

Anteversion and Anteflexion of the Uterus.—If a tumor be felt through the vaginal walls in front of the cervix uteri, hard, smooth, and rounded in shape, while the os uteri itself is thrown somewhat backward, the case may prove to be one of anteversion or anteflexion. The use of the sound, with proper precautions, would give us correct information as to this point, and prevent our falling into the error of Levret, who mistook an anteverted fundus for a calculus in the bladder. [The bi-manual method without the sound is sufficient to clear up the diagnosis of anteflexion.]

FIG. 231.



Anteflexion of the gravid uterus is, according to my experience, rather common. Its due recognition is most important, as miscarriage is to be apprehended when severe vomiting and disturbance of the functions of the bladder are well marked. The tumor is felt in front of the os uteri, which latter is situated further back than usual. The functions of the bladder are generally interfered with very much in such cases. During the fourth month the dislocation usually becomes reduced, and the patient is relieved—that is to say, in those cases in which a miscarriage does not occur before that period has been reached. (See p. 386, vol. i.)

Fibroid Tumors Growing from and in the Posterior Part of the Cervix

Uteri, or from the Uterus Itself (see Fig. 231).—It is sometimes difficult to distinguish between this condition and retroflexion of the unimpregnated uterus. In both there is a tumor, hard, smooth, and resistant, felt behind the upper part of the vagina and moving with the uterus. If a depression be felt between the tumor and the cervix, the case is probably one of flexion of the uterus. It is not a very common circumstance for tumors to grow in this position, the more usual seat of fibroid tumors being higher up than the cervix. Fibroid tumors growing from the uterus higher up and hanging down into the utero-rectal pouch might be mistaken for the retroflexion of the uterus, provided the shape of the tumor resembled that of the fundus of the uterus. The mobility of the tumor, and its want of connection with the lower part of the uterus would distinguish it from that due to fibroid tumor growing lower down. There is generally, in such cases, a want of symmetry in the tumor which is sufficient of itself to distinguish it from retroflexion of the uterus.

General Enlargement of the Uterus, from whatever Cause.—When the cavity of the uterus is considerably distended by a fœtus, by a large polypus, or from whatever cause, a tumor may be felt behind or in front of the upper part of the vagina. In cases of pregnancy, the recognition of this tumor is of the greatest possible assistance in establishing the diagnosis.

Pregnancy.—The recognition of enlargement of the uterus is of the utmost importance as a sign, and one of the most reliable, of the existence of pregnancy. In some cases of pregnancy it is not easy to establish the presence of a uterine tumor by a vaginal examination, when such undoubtedly exists; in others, a uterine tumor being present, the difficulty is to associate it with pregnancy.

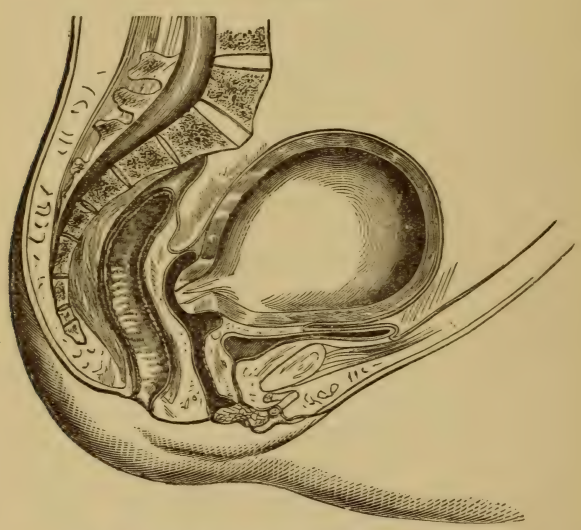
In normal pregnancy, the increase in the size of the uterus is not at first considerable, nor easily appreciated. The organ remains in the pelvis for about the first three months, and it is only toward the end of that time that, by a digital examination from the vagina, this increase in size can be positively appreciated. It may be easy to follow the growth of the uterus in a given case, when examinations are made from time to time, and opportunity for comparison is thus afforded, but it is not easy to pronounce upon the actual state of matters on the results afforded by a single examination. The increase in the size of the uterus, such as is due to pregnancy at a later period, is, however, more obvious, and it is then possible, also, to correct the results of a vaginal examination by the information derived from an abdominal examination.

Evidence of the enlargement of the uterus due to pregnancy is to be sought in the space between the cervix uteri and the pubes—*i.e.*, through the roof of the vagina. At the middle of pregnancy—during the fifth month—a rounded, smooth, tense, resistant tumor is here encountered by the finger, and this tumor shades off insensibly into the cervix uteri, there being no separation between them. There is sometimes a difficulty in recognizing this tumor when it is present: Gooch expressed the opinion that "the young practitioner finds more difficulty in satisfying himself about this symptom than about any other which is detected by touch;" and the statement is undoubtedly true. The difficulty sometimes arises, apparently, from the fact that the bladder, somewhat distended with urine, intervenes; at other times, from the tense elastic condition of the walls of the vagina and adjacent structures, interfering with the recognition of the tumor. If the supposed pregnancy have gone so far as the fifth month, the difficulty is almost always capable of removal by

placing the other hand above the pubes—by, in fact, employing conjointly the abdominal and the vaginal examination. Before the fourth month, however, the difficulty of detecting the enlargement is greater, and there is less possibility of correcting an error by having recourse to another method of examination. During the early months of pregnancy the uterine tumor is harder, firmer, and more resistant than it is subsequently, and the enlargement is not so easily got at, so to speak, from the vagina, owing to the interposed, and at first not materially altered, vaginal portion of the cervix uteri.

In pregnancy the menses are (usually) absent, the os is soft (examination of os uteri, p. 67, vol. 1), whereas in chronic enlargement or hypertrophy

FIG. 232.*



of the uterus the lips of the os are unchanged in this respect; further, in the latter case the enlargement remains pretty much *in statu quo*. The diagnosis of enlargement of the uterus due to fibroid tumor or polypus uteri from early pregnancy rests on nearly the same grounds; moreover, these fibrous growths generally give rise to hæmorrhage, or to more or less profuse menstruation. But a case may come before us in which it is a question whether a particular hæmorrhage be due to abortion, to fibrous tumor, or to polypus of the uterus. In abortion the os uteri is large, soft and open, whereas in fibroid tumor occasioning hæmorrhage the aperture is smaller, and the os is not soft as is the case in pregnancy. In cases of threatened abortion the os may, however, be found small. In polypus uteri the os may be open as in abortion, but the softness of

* Fig. 232 represents the position and relation of the uterus at the fifth to the sixth month. [The uterine wall is drawn a little too thick—G. H.]

pregnancy is not present. All these statements must be received subject to certain qualifications, elsewhere mentioned, in reference to the condition of the os during the early months of pregnancy. Cancer confined to the body of the uterus alone, which is a rare disease, could not be well mistaken for early pregnancy; the discharge, hæmorrhage, pain, etc., would put pregnancy out of the question.

The possibility of one of the conditions alluded to coexisting *with* early pregnancy must not be forgotten. In such cases much more difficulty would be encountered in making a complete diagnosis.

In cases of extra-uterine pregnancy, the uterus is enlarged and undergoes the same kind of changes, though not to the same degree, as in normal pregnancy.

After the fourth month of pregnancy the enlarged uterus is to be felt more distinctly between the cervix and the os pubis; the tumor is tolerably firm, and it is reached with a variable degree of ease. It gives an obscure sense of fluctuation, and *ballottement* is perceivable. The position of the patient which is most favorable for the purpose of ascertaining the existence of ballottement is the erect posture. The rectum and bladder having been thoroughly evacuated, the finger is pressed upward, resolutely but slowly, against the uterine tumor, and it is then very suddenly made to retreat for the space of half an inch or so, and there retained. The following instant the point of the finger is conscious of a slight tap, and this is produced by the fœtus, at first pushed upward, falling suddenly by the force of gravity on the lower part of the uterine cavity, at the point with which the finger is in contact. The sensation communicated is very peculiar and characteristic. Cases are related by Depaul and Cazeaux in which the fundus of the uterus, enlarged and tilted forward, was felt through the walls of the bladder, and communicated a sensation like that of a fœtus within the uterus. The presence of a stone in the bladder might equally give rise to the sensation.

There is another kind of ballottement which is performed through the abdominal walls, and which will be described further on.

Although fibrous tumors of the uterus, equally with polypus growing within the cavity, usually prevent the occurrence of pregnancy, or at least cut it short at an early period, the coexistence of pregnancy with either of these conditions is now and then observed: these complicated cases present, as might be expected, peculiar symptoms, and require careful examination and attention for their recognition.

Mole Pregnancy.—The most important of the conditions comprehended under the above title is that known as the hydatidiform mole. The symptoms are at first those of pregnancy, but no movements of the fœtus are felt at the proper time for their appearance; the breasts do not pass through the regular series of changes, and yet the uterus continues to enlarge. The enlargement progresses more, often very much more, quickly than is the case in normal pregnancy. On examining from the vagina the uterus is found enlarged as in pregnancy, and the alterations met with in the vaginal portion may be pretty nearly identical with those peculiar to this condition, but the uterus is harder than is the case in normal pregnancy. It is, as before remarked, larger than it should be, considering the time the catamenia have disappeared. Hæmorrhages are occasionally observed, or an occasional discharge of a watery fluid from the vagina. It is not possible to detect ballottement as in regular pregnancy. The os uteri may or may not be open sufficiently to allow the observer to detect some of the hydatidiform cysts in the cavity. The

physical condition of the uterus, however, as ascertained by vaginal examination, may be such that it is impossible to distinguish it from normal pregnancy; even the fact that ballottement is absent does not positively assure us that there is not a living fœtus within the uterus, as already remarked; and the diagnosis must then be guided by the result of abdominal examination, by a consideration of the rational symptoms, and by the history of the case. (See Examination of Abdomen, Appendix C.)

True hydatids of the uterus are extremely rare. Rokitansky met with one case. I have met with one also since the second edition of this work was published;* but I believe these are the only authenticated cases on record.

Missed Labor.—Under this term have been classed certain very rare and extraordinary cases in which, pregnancy having advanced nearly to its completion, the fœtus has perished, and has been retained in the uterus for a variable time.

Enlargment due to Sanguineous Distension of Uterus (*Hæmatometra.*)—Cases in which the uterus is largely distended with blood are rare. In most of the cases of this kind the distension is due to retention of the menstrual fluid, which is unable to escape owing to some abnormal condition of the canal of outlet, from an imperforate condition of the hymen, or congenital closnre of the os uteri. In patients who have formerly menstruated, retention of menstrual fluid may be due to one of the following causes: *Occlusion of the os uteri*, in consequence of the *use of caustics*, or in consequence of *adhesion following parturition;* diseases of the uterus—*e.g., polypus uteri, hypertrophy of the cervix uteri, cancer* of the inferior part of the uterus, possibly also pressure of *tumors external to the uterus.*

A sign common to the conditions just described is absence of the catamenia—and care will be consequently necessary to distinguish such cases from pregnancy.

The remarkable symptoms produced by retention of the catamenial fluid have been elsewhere described. With reference to the physical characters of the tumor in the cases now before us, it is elastic, rounded, giving evidence of fluctuation, and, if large, this fluctuation can be made evident by simultaneous abdominal and vaginal examination.

Cases of hydrometra are rare. The hydrometra is usually present in women beyond the climacteric age; the enlargement is of slow growth, giving rise to few symptoms. There are, however, occasional severe labor-like pains, which are due to contractions of the uterus.

Purulent Collections in the Uterus.—The uterus may be distended with pus or with a puriform secretion, which may be considerable in amount.

Physometra.—Here the uterus is enlarged from the presence of gas within its cavity. This disease is very rare, but the enlargement due to it may be very considerable. Escape of gas from the vagina is no evidence of its existence.

Tubercle of the uterus is a very rare disease. The enlargement may be considerable. Attacking the mucous membrane in the first place, the cavity of the uterus may at a later period become "filled by a purulent pulpy fluid" (Farre), and thus the uterus becomes enlarged in another way.

In cases of enlargement of the uterus due to any of the causes con-

* "Obst. Trans.," vol. xii., p. 237.

sidered up to the present point, the tumor is to the touch more or less soft or elastic, or conveying an impression that there is fluid within. The next class of cases are those in which the enlarged uterus is hard and firm and resistant. The conditions which may under such circumstances be present, and between which we have to distinguish, are the following:

Fibrous tumor of the uterus.

Fibrous polypus within the uterus.

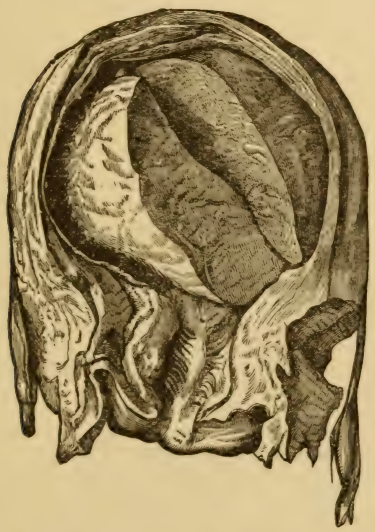
Cancer of the body of the uterus.

Chronic enlargement or hypertrophy of the uterus.

These different conditions are, with the exception of cancer of the uterus, all more or less chronic in character. Each of them may be attended with more or less profuse losses of blood.

Fibrous Tumors and Fibrous Polypi of the Uterus.—Whether the

FIG. 233.*



tumor be in the wall of the uterus or in its cavity (see Fig. 233), the uterus is equally hard and resistant externally. In the case of a polypus, the position of the uterus is more symmetrical, whereas a large fibrous tumor growing in the walls gives rise to distortion of the organ. The os uteri may be alike in the two cases—it may be opened or closed: in the case of polypus, however, it is more generally open, so as to admit the point of the finger, and frequently a portion of the surface of the polypus can be felt within the os, even if it be not found projecting into the vaginal canal. In some cases it is impossible to ascertain whether the

* Fig. 233, showing an intra-uterine fibrous polypus, is drawn from a preparation in the Museum of University College.

case be one of fibrous tumor or fibrous polypus, until after dilating the os uteri artificially, as first practiced by Sir J. Y. Simpson.

Cancer of the Fundus Uteri.—The diagnosis of cancer in this position, from polypus, chiefly turns on the rate of progress of the case, unless recourse be had to artificial dilatation of the os for the purpose of exploring the interior of the uterus, and thus obtaining further information. The body of the uterus may become affected secondarily, and so enlarged, but the condition of the os uteri in such cases offers decisive diagnostic data.

Chronic Enlargement or Hypertrophy of the Uterus.—An enlargement of the uterus due to this cause is limited in degree; pure and simple hypertrophy never gives rise to considerable enlargement. Hypertrophy of the uterus is an affection which is of a peculiar character; the uterus is thickened, increased in size, increased in vascularity; and it gives rise often to great discomfort from the pain, dragging sensations, feeling of weight, and from the effects of the mechanical pressure on the neighboring organs. It is usually associated with enlargement and hypertrophy of the vaginal portion of the cervix uteri; and, indeed, the condition of the cervix is the one which more usually attracts attention to the exclusion of the other morbid condition—viz., the enlargement and hypertrophy of the fundus or body of the uterus.

Enlargement of the Fallopian tube gives rise to a rounded, somewhat pyriform elastic tumor, which may be felt through the upper vaginal wall. The Fallopian tube occasionally becomes distended—in rare instances very greatly so—by a collection within it of *serous*, *purulent*, or *bloody fluid*: the distension may be due to development of the ovum within the canal—*Fallopian, or tubal pregnancy.* The tumor, constituted by a distended Fallopian tube, is usually of a somewhat lengthened form, resembling in shape a portion of distended intestine. If the whole Fallopian tube be equally affected a tumor of a semicircular, sausage-like form results. The distension may be limited to one or other end of the tube; one or both tubes may be affected.

The tumor, when of Fallopian nature, is rounded, movable, well-defined, separable (usually) from the uterus; situated in the retro-uterine pouch, a little to one side. Fluctuation may be evident in the tumor; it is elastic to the feel. There may or there may not be tenderness on pressure. Difficulty and pain in defæcation, "pressure pains" in various parts, pain in walking—these are the symptoms more often observed.

The tumors with which the distension of the Fallopian tube is most likely to be confounded are—ovarian cystic tumors in their early stage of growth, Wolffian cysts, hydatid cysts, and abdominal pregnancy. When Fallopian pregnancy is present, the course of the affectiou is different in different cases. Mostly the result is rupture of the tube in the second or third month of gestation, followed by speedy death (generally within twenty-four hours); or the rupture may not then be fatal, the fœtus becoming encysted, and growing possibly till the full term of gestation has been reached. Accordingly, when we have to do with a chronic enlargement of the tubes, this latter condition may be dismissed from consideration. The diagnosis of tumors produced by distension of the Fallopian tube by fluid from other tumors, will be again considered under Examination of the Abdomen.

In *extra-uterine pregnancy*, the patient is usually known or suspects herself to be pregnant; the tumor grows continuously and pretty quickly, the uterus simultaneously enlarges, almost to the same degree as if the

ovum were within it. Menstruation is not so constantly absent as in ordinary pregnancy. The os uteri presents the conditions met with in pregnancy. Rupture of the Fallopian tube or of the cyst enclosing the fœtus, escape of the fœtus into the abdomen, and death, are the ordinary issue of these cases, the accident generally occurring before the middle period of gestation; cases of extra-uterine pregnancy are for this reason not often diagnosticated during life. The fœtus may, however, die and undergo mummification within the tube.

In many reported cases of tubal gestation, the condition actually present is defective development of the uterus, this organ being divided into two, and the ovum developed in one cornu of this double uterus. One cornu may be larger than the other; and when the ovum is developed in the imperfectly formed or lesser cornu, rupture almost invariably takes place; but when the ovum is developed in the more perfect cornu, pregnancy may proceed normally. Hence we may meet with cases in which the cavity of the uterus does not appear to contain an ovum, but in which a tumor containing an ovum is detected close to it; and yet the case may not be one of Fallopian pregnancy in the true sense of the word, but of pregnancy in one cornu of a bilocular uterus.

[This may be true. But it is a well-established fact that the uterus may be normally developed, and that an impregnated ovum may be arrested in that portion of the Fallopian tube traversing the uterine structure, giving rise to interstitial extra-uterine pregnancy. Our medical literature contains many examples of this anomalous pregnancy. Dr. Lenox Hodge, of Philadelphia, reports one, in which he cut into the sac from the cavity of the uterus and safely delivered the fœtus *per vias naturales*. A well-known case has lately occurred in New York which was under the care of Dr. Emmet, Dr. McBurney and Dr. Thomas, where the fœtus was destroyed by the electric current and discharged through the uterus.]

Abdominal Pregnancy.—In cases of abdominal pregnancy—that is to say, cases in which the pregnancy is abdominal to begin with, or in which it has become so in consequence of the rupture of the Fallopian tube—the ovum may become fixed and encysted at the lower part of the pelvis behind the uterus, and between it and the rectum, and may in this position give rise to a tumor of a rounded elastic character. Symptoms, such as bearing down behind, pain and discomfort in the pelvis, show themselves earlier when the case is not one of primary Fallopian pregnancy. The woman, from her sensations and condition, generally thinks herself pregnant. She may suffer greatly from pain during the whole course of the pregnancy.

The diagnosis of abdominal pregnancy, the tumor being in the pelvis, from Fallopian pregnancy, would be difficult at an early period; but if the pregnancy have advanced beyond the middle period, the presumption is that the fœtus, if not in the uterus, is not in the Fallopian tube. The possible case of double uterus before mentioned should be borne in mind. In a very extraordinary case recorded by Mr. L. R. Cook, there was simultaneous intra-uterine and abdominal pregnancy, the pregnancy going on to full term.*

Occasionally we have to do with a tumor behind the uterus, which is constituted by the *remains* of the fœtus after abdominal pregnancy. These remains, enclosed in a sac which becomes adherent by inflammation to the adjacent peritoneal surface, and which may be recognized by the explor-

* "Obst. Trans., vol. v.

ing finger as bones, many continue undischarged for months, or even for years. In a case related by Dr. Brandt,* a bony tumor, containing the remains of a fœtus, remained in the abdomen for fifty-four years; the patient had borne two children naturally since she became pregnant with the fœtus which was afterward retained. Several other cases of a like character, but of less duration, have been reported.

Ovarian Tumors.—The larger number of cases which come before us, and in which there is a question as to the presence of ovarian disease, are cases in which the tumor has become so large as to invade the abdomen; there is an abdominal enlargement. It thus generally happens that the tumor, when it comes under our notice, is capable of being examined both from the vagina and through the walls of the abdomen.

We are now and then able, in cases of ovaritis or neuralgia of the ovary, to detect the slightly enlarged ovary by digital examination; the ovary being sensitive to the touch, its position is then easily ascertained. In the first stage of cystic tumor of the ovary, however, pain is usually absent, there is generally nothing to suggest the necessity for a digital examination, and it is not common for ovarian cystic tumors smaller than the fist to be diagnosticated. If the tumor, together with the ovary, be firmly attached within the pelvis, the symptoms will become developed at an earlier period than when the tumor is pedunculated, and when the freedom of motion it possesses is consequently greater. When an ovarian tumor is small, it usually occupies the utero-rectal fossa, and is not quite in the middle line.

In endeavoring to form a diagnosis as to the nature of a tumor we suspect to be ovarian, our first object should be to exclude the uterus from the consideration. The sound is here of great service (see Examination of Uterus by Sound). The tumor may, however, be adherent to the uterus; in this case the sound is also of service, by informing us of the direction of the uterine canal, and, further, as to the shape, size, and mobility of the tumor.

In a few cases where the development of the ovarian tumor proceeds rapidly, and the tumor remains in the pelvis behind the uterus, the inconvenience and distress which are produced are so considerable as to create greater difficulty as regards the diagnosis; micturition and defæcation are seriously interfered with, and severe pains in the pelvis or in the lower extremities are experienced.

In cases of extra-uterine pregnancy, when the cyst is situated low down in the pelvis, the tumor in its roundness, elasticity, and other physical characters somewhat resembles that produced by an ovarian tumor. From hydatid cysts growing in the peritoneal cavity low down, small ovarian tumors would be probably distinguished with difficulty. The hydatid cysts are usually more firmly fixed, and move with the vaginal wall; small ovarian tumors are usually movable and single, unless indeed in cases of double ovarian disease: whereas hydatid cysts attached to the pelvis in the neighborhood of the vaginal canal are usually two or three in number.

The tumor produced by peri-uterine hæmatocele differs from ovarian tumor—first, in its shape, which is usually not globular, as is the case in ovarian tumor; secondly, in its relations, it being less easily definable and separable from the adjacent parts than ovarian tumors; thirdly, in

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* *Edin. Med. Journ.*, Sept., 1862.

regard to the accompanying or preceding symptoms; fourthly, in respect to its want of mobility as compared with ovarian tumor.

Abscesses, or plastic effusion, the result of inflammation of various kinds, might, under certain circumstances, be confounded with ovarian tumor. The history of the case should, under these circumstances, be carefully looked into, when its real nature will become at once apparent. Lastly must be mentioned the possible case of two tumors being found in the pelvis. It occasionally happens that pregnancy and ovarian disease are observed simultaneously.

We have now to consider those cases which are, clinically speaking, more common, and in which the tumor felt is *much larger* than this, so as to more or less completely fill the pelvis. There may be a very large ovarian tumor, and yet comparatively little direct evidence of its presence may be obtained by digital vaginal examination alone; for the tumor may have escaped altogether from the pelvis, dragging up with it the ovary and part of the broad ligament, to become a tumor nearly completely abdominal. We have now, however, to deal with those cases in which the ovarian tumor is still wholly or in part in the cavity of the pelvis, and to point out the diagnosis of the tumor from others with which it may be confounded.

A large tumor of ovarian nature occupying the pelvis necessarily exercises an influence on the surrounding organs. Thus the uterus is pushed to one side, or dislocated in various directions; it may be pushed downward or forward by the tumor, or it may be stretched and extended, so that the cavity is materially lengthened. The most important condition from which ovarian tumor is to be separated is enlargement or tumor of the uterus; this distinction is not unfrequently attended with some degree of difficulty. The first point to be made out is the position of the cervix uteri, and, this being ascertained, it is in most cases easy to decide whether the tumor be constituted by the enlarged uterus or by a tumor separate and distinct from this organ. The most reliable distinction between an enlarged uterus and an ovarian tumor is the fact that, in the former case, the cervix uteri is in the median line, and an equal portion of the tumor is on each side of it; whereas, in the other case, the cervix uteri is on one side, out of the middle line, and the mass of the tumor lies to one or other side of this part of the uterus. Even this is likely, however, to mislead. When the uterus is considerably enlarged (by pregnancy, *e.g.*), the cervix may be high up, and difficult to reach in either case; but when a large ovarian tumor is present, it is usually thrust out of the middle line of the body. In the case of pregnancy far advanced, the vaginal portion of the cervix would be altered also in other ways still more characteristic. It may happen, however, that enlargement of the uterus from pregnancy and ovarian tumor coexist in the same patient; in such a case the diagnosis would be cleared up by circumstances subsequently observed. If the tumor become pedunculated at an early period, it soon becomes abdominal, and there is less evidence of its presence afforded by a vaginal examination; but if it be sessile this change does not so readily take place, and the tumor may be moulded, so to speak, below to the cavity of the pelvis, while it may at the same time spread upward above into the abdomen.

When the ovarian tumor is large, or, at all events, when a considerable portion of such tumor occupies the pelvis, it may be confounded with retroversion of the gravid uterus, as well as with enlargement of the uterus of other kinds. In retroversion of the gravid uterus, the cervix

uteri is thrust upward and forward, and the fundus uteri forms the tumor which presses downward in the vagina. Such a position of the cervix uteri is rare when ovarian tumor is present.

Ovarian tumors, so large as to occupy the pelvis, can hardly be confounded with large fibrous tumor of the uterus. The ovarian tumors have greater elasticity than is the case if fibrous tumors be present, and the growth is much more rapid.

The diagnosis of the *nature* of large ovarian tumors has been considered in the chapters on Diseases of the Ovaries.

Other Cystic Growths in the Pelvis.—The cysts of the broad ligament (Wolffian cysts), which generally do not attain a size greater than that of an orange, may greatly exceed this in size. Their diagnosis is obscure, and chiefly rests on the chronic course of the affection.

Osseous or Other Solid Tumors Growing from the Pelvic Walls.—There are a few cases on record, in which osseous tumors—exostoses—have been found growing from the walls of the pelvis, and forming masses of various sizes and shapes. The diagnosis of the nature of such a tumor would not probably be attended with great difficulty. Its growth is slow, it is necessarily hard and firm, and it is immovable. There is a condition, also rare, which might be mistaken for it, viz., projection of the body of the lowest lumbar vertebra forward into the cavity of the pelvis, due to disease of the lumbo-sacral articulation; this disease being the result of injury, or simply constitutional.*

Cancerous growths from the inner surface of the ilium have been noticed. Kiwisch states that he saw a patient in whom a mass of this kind, of the size of a bead, in its shape and position resembled an ovarian tumor. Hard fibrous tumors are now and then witnessed growing from the sacro-iliac symphysis into the pelvic cavity.† Denman relates a case in which an excrescence of a firm fatty substance projected from one side of the upper part of the sacrum, and was so large as nearly to fill the pelvic brim. In Dr. D. D. Davis's work‡ are related two very remarkable cases, in which large fibrous tumors were found growing from the floor of the pelvis, and occupying this part of the pelvis so completely as to interfere with delivery.

The diagnosis of these tumors growing from the pelvic walls from tumors of the viscera might present some difficulty. The object would be to determine the point at which the tumor grew, and, unless it were of considerable size, this would be comparatively easy. Cases of the kind above alluded to are extremely rare.

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* See Dr. Barnes's exhaustive essay on Spondylolisthesis in "Obst. Trans.," vol. vi.
† Kiwisch. "Klin. Vortr." Bd. II., edited by Scanzoni, p. 326.
‡ "Principles and Practice of Obstetric Medicine," vol. i., p. 142.

C.

DIAGNOSIS OF ABDOMINAL TUMORS INCLUDING PREGNANCY—EXAMINATION OF THE ABDOMEN.

Methods of Examination—Position of the Patient during Examination.
Enlargement of the Abdomen.—Results of Inspection as to Diagnosis of Nature of Enlargement—Palpation; Discovery of a Tumor; Percussion; Obscurity produced by Fatty Distension.
Presence of Fluid.—Various causes; Ascites, Ovarian Dropsy, Ascites with Tumor—Diagnosis of these—Extreme Distension of Bladder.
Gaseous Distension.
Cases simulating Presence of a Tumor.
Tumors traceable into the Pelvis; Enumeration of these; Tumors traceable into Pelvis more rarely met with; Brief Description of these; Tumors not traceable into the Pelvis; Enumeration.
Diagnosis between Enlargement of the Uterus from Pregnancy or otherwise; Ovarian Tumors and Distension of the Bladder; Particular Examination of the Signs of Pregnancy.
Confirmatory Signs of Pregnancy.

For clinical purposes, it is usual to divide the abdominal surface as follows: The portion of the abdomen above a horizontal plane passing through the anterior extremities of the tenth rib on either side, is the *epigastric region*, the lateral portions of which are the *right and left hypochondria*. The *umbilical region* is bounded above by the lower limit of the epigastric region, and below by a line passing between the anterior superior spinous processes of the iliac bones on either side. The *hypogastric region* comprises that portion of the abdomen situated below the line last mentioned. The inferior boundaries of this region are the ossa pubis, and Poupart's ligament on each side.

The *methods* of examination which we employ in investigating the condition of the abdomen are—1. *Inspection*, by which we are made cognizant of the size and shape of the abdomen, the condition of the integuments covering it, etc. Measurement of the abdomen belongs to this division of the subject. 2. *Palpation*, by means of which we ascertain the presence of varying degrees of resistance, hardness, softness, and the like, of the fibdomen generally, or of different parts of the same, and are thus enabled to correct erroneous impressions conveyed by inspection alone. Under this head is included *fluctuation*, a physical sign of the presence of fluid. 3. *Percussion*, by the assistance of which we are able to distinguish between tumors or solid bodies, and distension by air or fluid. 4. *Auscultation*, in which the sense of hearing is employed for the detection of certain sounds. 5. A combined vaginal and abdominal examination by means of palpation over the hypogastric region, while the finger of the other hand is within the vagina, or with the uterine sound within the uterus. In the diagnosis of pelvic tumors of doubtful nature, this combined examination is often of the greatest possible service.

All these methods of examination are not employed in all cases. Inspection, palpation and percussion, combined, are the methods of examination most commonly employed, and in a few cases we find in the

employment of auscultation a means of arriving at a conclusion which other methods do not afford.

ENLARGEMENT OF THE ABDOMEN.

The causes of that enlargement may depend on a morbid or altered condition of some one of the generative organs, or it may not; it is necessary to start with no preconceived view of the case. The principle is to take nothing for granted, and not to accept anything as reliable which only comes to us second-hand.

Position of the Patient during the Examination of the Abdomen.—The patient should be placed, lying on the back, on a firm, unyielding couch or bed, the shoulders somewhat elevated, the knees a little drawn up so as to relax the abdominal parietes; the whole body in a state of absolute repose. It is sometimes desirable to engage the patient in conversation, in order to prevent a kind of involuntary contraction of the recti muscles, which often interferes materially with the attainment of the object desired.

If auscultation is to be practiced, the stethoscope must be applied to the skin, or fallacies are likely to arise. In many cases, an inspection of the skin itself is desirable. It is best, however, to commence the examination without entirely uncovering the abdomen, and to obtain thus a general idea as to the shape and size of the same, the presence of tumor, and the like. Before undertaking a regular examination of the abdomen, the contents of the rectum and bladder should be evacuated.

Is the Enlargement real, or only apparent, or assumed for Purposes of Deception?—Some patients, desirous of being thought pregnant, or for other reasons wishing to impose upon us, can acquire the power of projecting the abdomen forward, so as to simulate the enlargement due to pregnancy. This arching of the abdomen is effected by sharply bending the vertebral column in the lumbar region; and when patients presenting this factitious enlargement are made to lie down, on placing the hand over the centre of the loins a corresponding hollow is felt there. In a case which came under my own observation, the patient, a young woman about twenty-five years of age, had been supposed to have an abdominal tumor. On a casual examination, the appearance and general form of the abdomen were strongly corroborative of this supposition; but no tumor could be detected, no resistance was anywhere felt, and the tympanitic sound, on percussion, was decisive as to the correctness of this negative view of the case. The nurse in attendance directed my attention to the condition of the back, and it was then found that the patient was affected with angular, and also very slight lateral, curvature of the spine in the lumbar region, the consequence of an injury received a few years before. Here the arching of the abdomen was real, but there was no enlargement in the true sense of the word. Then there is a remarkable class of cases in which the abdomen is enlarged, the patient believes she is pregnant, and endeavors to persuade others that this is the case. Anæsthesia is essential in the diagnosis of these cases.

Size of the Abdomen.—From the mere element of size alone there is nothing very positive to be deduced. The most common causes of extreme persistent enlargement of the abdomen in women are ovarian dropsy and ascites.

If the enlargement be *symmetrical*, affecting the two sides of the abdomen equally, this is in favor of the presence of ascites or tympanitic

distension of the intestines. A want of symmetry is usually observed when the enlargement is due to the presence of a tumor, as in cases of ovarian dropsy (generally), fibrous tumor or polypus of the uterus, enlargement and tumor of the liver or spleen, etc. To this general statement there are many exceptions. Thus, in large simple cyst of the ovary the abdomen is often symmetrically enlarged at an advanced period of the disease. Similarly, ascites, when associated with tumors of the abdomen, often produces, superficially at least, a symmetry in the appearance of the abdomen on the two sides.

When we have to distinguish between ascites and ovarian dropsy, there is a point in reference to the shape of the abdomen which is of assistance, and it is this: That, whereas in cases of ovarian dropsy the enlargement is rounded anteriorly, whatever be the position of the patient, in cases of ascites the anterior surface becomes flattened when the patient is laid on the back. This distinction, however, may fail us when, as is sometimes the case, the distension of the abdomen from ascites is considerable in degree.

Results obtained by Palpation.—The hand is to be spread out flat, so as to bring as much of the palmar surface of the fingers into contact with the abdominal wall as possible. Pressure, slight at first and gradually increased in force, is then made over the whole of the abdominal surface, beginning with the hypogastric region, the general direction of the pressure being toward the vertebral column. One or both hands may be employed in this operation. It is important that the pressure made be at first slight in degree; otherwise contractions of the muscles are produced, and the attempt of the operator will be defeated. Normally, the abdomen offers no resistance to the pressure of the fingers (the patient being placed as above directed), save that produced by spasmodic and involuntary, or intentional contraction of the recti muscles; everywhere the fingers are allowed to sink inward to a considerable depth, and it is usually possible to touch the vertebral column posteriorly.

Discovery of a Tumor.—If the abdomen be only moderately distended, and the fingers can be made to sink inward equally at all points, whether above or below, but especially below, without encountering a hard resistant body, we may pretty confidently predict that no solid tumor is present. When the abdomen is largely distended, however, the case is different; the fingers may in some such cases be made to sink inward to a considerable depth without encountering a solid resisting body, while such a one is nevertheless present. This now and then happens when the abdomen contains a solid ovarian tumor together with a large amount of ascitic effusion.

Women desiring to frustrate the purpose of the examiner occasionally have recourse to the expedient of contracting the recti muscles. The practitioner will generally be able to procure the relaxation necessary by engaging the patient in conversation—in extreme cases by inducing anæsthesia, as mentioned above. The contraction is sometimes also purely involuntary. Such cases are extremely perplexing, as will be explained farther on; contraction of the recti muscles may actually simulate the presence of a tumor. In cases of suspected pregnancy, the recognition of the presence of a tumor is of extreme importance; for however positive the other signs of pregnancy may be, they are worth nothing if it can be clearly made out that there is no tumor discoverable in the abdomen. By palpation we are usually able to detect such a tumor at an early period of pregnancy, and the examination of this, or,

indeed, any abdominal tumor, should be conducted as follows: The patient should lie as above directed, the rectum and bladder having been previously emptied; the operator, having placed the hand flat on the abdomen close above the os pubis, is then to follow the admirable procedure recommended by Rœderer. This consists in directing the patient to set the abdominal muscles in action by breathing very deeply, the hand being made all the while to follow the movements of the abdominal wall very closely. At the moment when the expiration is completed, the hand comes in contact with the hard, round, ball-like uterine tumor. In the discovery of tumors in the abdomen, which are not otherwise easily detected, this method of examination is quite invaluable. If the tumor be so large as to fill the abdomen, the method in question is of course of no service.

The recognition of a tumor is frequently, especially in cases of pregnancy, made difficult by the presence of a *fatty condition of the abdomen*, which prevents us from ascertaining the presence of the tumor due to the enlarged uterus.

Supposing that by careful kneading of the abdomen at every point no hard tumor is discoverable, if the abdomen be soft, and everywhere non-resistant, allowing the fingers to sink inward equally at all points, the enlargement not being considerable, it will be evident that it is not constituted by a solid tumor of any kind; neither can it be caused by a circumscribed fluid tumor (such as encysted dropsy of the ovary, for instance). If, however, the enlargement of the abdomen be *considerable*, the conclusion formed under the above circumstances cannot be so exact and definite. The fingers may be allowed to sink inward some distance without encountering solid resistance, but there may nevertheless be a solid tumor. Such a condition is met with, as before remarked, when there is a solid or other tumor of the ovary or a solid tumor of the uterus or of other organs *associated* with ascitic distension of the peritoneal cavity, or, again, when there is a very large unilocular cyst of the ovary occupying the abdomen, and which is not very tense or resistant.

Results obtained by Percussion.—The middle finger of the left hand, being pressed closely against the abdominal wall, is to be struck by the tips of the fingers of the right hand, sharply but lightly. If a clear sound be elicited, it indicates gaseous distension; but if the sound be dull, the distension is due to fluid or solid matters. We have in this mode of examination a ready method of distinguishing *gaseous* from *fluid distension:* palpation would give but little assistance in deciding between these two. When the enlargement is due to *fat* in undue quantity, percussion affords no decisive results.

When it is a question between gaseous and fluid distension, valuable aid is afforded by the *fluctuation* test. The palmar surface of the fingers of the left hand is pressed closely over one side of the abdomen, and the abdomen is lightly tapped by the fingers of the other hand on the opposite side. When fluid is present between the two points in question, an impulse is communicated through the aqueous medium, and the fingers of the left hand experience a sudden impulse, varying in character with the nature of the fluid and with the degree of tightness of the distension. No impulse of the kind is communicated when there is gaseous distension alone; but when there is an accumulation of fat present, a sensation somewhat resembling fluctuation may be conveyed. This, however, could only deceive an inexperienced observer. The test of fluctuation is only of value when applied by an educated hand. A sensation closely

resembling that of fluctuation is sometimes felt when the abdomen is largely covered with fat.

[We are often consulted by patients who consider themselves pregnant or suffering from a tumor of some sort, when, in fact, the enlargement of the abdomen is due wholly to deposits of fat in the abdominal parietes.

The diagnosis is easy enough. However thick the parietal cellular tissue may be with fat, the umbilicus is always clear of it. With the left index finger in vagina (patient in recumbent position) and two fingers of right hand pushed forcibly down into pelvis, through the umbilicus, we can easily detect the tumor if there is one large enough to cause enlargement of the abdomen. If no large tumor is felt the diagnosis is then completed by placing the ulnar edges of the two hands longitudinally, one on each hypochondriac region, and then pushing them toward the umbilicus in such way as to lift the great rolls of fat up from the muscular walls of the abdomen. The same thing may then be done by transverse pressure with the two hands in like manner from the epigastric and pubic regions. I have seen cases of this sort where physicians of considerable experience were in doubt as to their nature.]

Results of Percussion or Palpation doubtful.—Sometimes the gaseous distension of the intestines is masked by the presence of a thick covering of fat in the omentum or in the abdominal wall, and a clear sound is consequently not elicited on percussion. This combination of slight tympanitic distension with accumulation of fat in the omentum and abdominal parietes is very commonly met with in women about the period of sexual involution, just at that period of life when the activity of the sexual organs is about to terminate; and when it happens that the patient is desirous of becoming pregnant—a not by any means unusual circumstance—the presence of this combined tympanitic and fatty distension of the abdomen—associated, it may be, with amenorrhœa, leads her to suspect that she is pregnant. Some most instructive cases illustrative of the points here set forth have been related by Dr. Gooch.* An examination of the state of the breasts and of the vagina must be made if the percussion and palpation results are indecisive, and if there be reasons for suspecting that a tumor is present.

A condition is sometimes met with where the abdomen is enlarged, no actual tumor discoverable, and where the intestines, more protuberant than usual, constitute the enlargement. This condition is met with sometimes during the first two months of pregnancy, while the uterus is yet too small to be felt above the pubes. The persistence for six months or upward of an enlargement of the abdomen, with no signs of a tumor discoverable, would negative the suspicion of pregnancy.

In some cases, the difficulty experienced in the detection of the tumor, no undue amount of fat being present, arises from the fact that there are *great tenseness and resistance*, the distension being, for the most part, uniform and symmetrical; and the difficulty is greater, because this tenseness and resistance preclude us from exploring beyond the surface of the abdomen. We are unable to determine positively whether a tumor be actually present or not. Here the fluctuation test and the results of percussion only are available.

The result of the examination, conducted in the manner now directed,

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* See the edition of Gooch, published by the New Sydenham Society, pp. 111 *et seq.*

should be to enable the observer to determine whether the enlargement of the abdomen be due to—

a. Presence of fluid;

b. Gaseous distension; or,

c. Presence of a tumor.

PRESENCE OF FLUID.

In these cases there is widespread fluctuation, this being evident over the greater part of the surface of the abdomen.

The conditions between which we have ordinarily to distinguish are:

Ascites;

Ovarian dropsy;

Ascites combined with presence of a tumor or tumors;

Some rare conditions to be presently mentioned, and not included under either of these three categories.

Two conditions somewhat difficult to distinguish one from the other are *ascites, and a single very large ovarian cyst.* They will be discriminated by attention to the following points:

First, as regards the *size of the abdomen.* This gives us no reliable information.

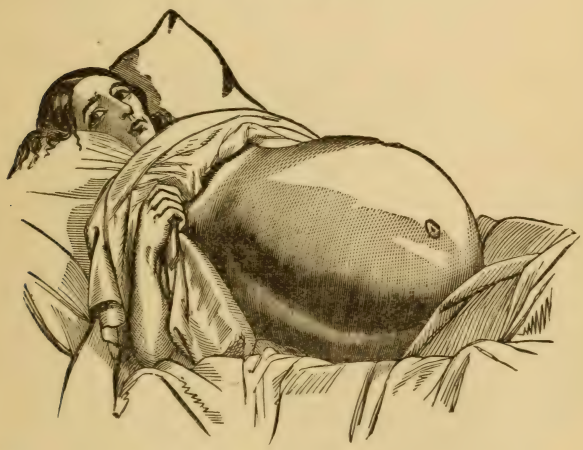
Shape of the Abdomen.—In ascites, the abdomen becomes flattened when the patient lies down, while in ovarian disease this flattening is not observed. In ovarian disease largely distending the abdomen, the floating ribs are pushed outward; the thorax is thus made to assume a peculiar conical shape. The enlargement of the abdomen in ascites is generally symmetrical, whereas in ovarian disease there is usually a swelling or prominence, more decided on one side than the other. This latter is a distinction which will not at all hold good when there is ovarian dropsy with only one very large cyst. The shape of the abdomen, speaking generally, is more ovoid in ascites, rounder in ovarian disease.

The *condition and appearance of the skin* vary usually in the two cases. In ascites, there is generally a marked enlargement and distension of the superficial veins, wanting in the other case. This is, however, not to be depended upon. I have seen the *lymphatics* enormously distended in an advanced case of ovarian disease, but this condition of the lymphatics is probably the exception rather than the rule. Moreover, I have seen a precisely similar condition of the lymphatics in a case where the bladder was very largely distended from the retroversion of the uterus, the uterus being the seat of fibroid growths. The lower part of the abdomen presented, in this latter instance, a most remarkable appearance; there were large cord-like, sinuous lines running upward, most of them in the direction of the umbilicus. It would not be possible to arrive at any definite conclusion as to the nature of the enlargement, either from the condition of the veins or from the condition of the lymphatics covering the surface.

There is *fluctuation* both in ascites and in ovarian dropsy. In ovarian dropsy it is often very indistinct, and where the abdomen is distended by two or more large cysts, it is unequal at different parts of the abdominal surface. This inequality is, of course, not noticed in ascites. In cases of ascites, fluctuation is perceived equally well, whatever may be the points between which it is sought for. If, however, there be one very large cyst, the same equality is observed in cases of ovarian dropsy. In both cases, the degree of facility of perception of this size varies extremely, this being dependent on the degree of distension.

Results of Percussion.—In cases of ovarian disease there is a dull sound on percussion, which may, if the cyst be large enough, extend up to the ensiform cartilage, while there is a clear sound on percussion in the flanks, where the intestines are situated. In ascites, on the other hand, the intestines float on the surface of the liquid, and over the epigastric region there is a clear intestinal note on percussion, while in the flanks there is dulness on percussion. The only exception to this latter statement is when the stomach and intestines happen to be glued down, and prevented rising and so floating on the ascitic fluid, by adhesions. When the ovarian tumor is *associated with ascites*, there may be dulness above in the epigastric region, and in the flanks also.

FIG. 234.*



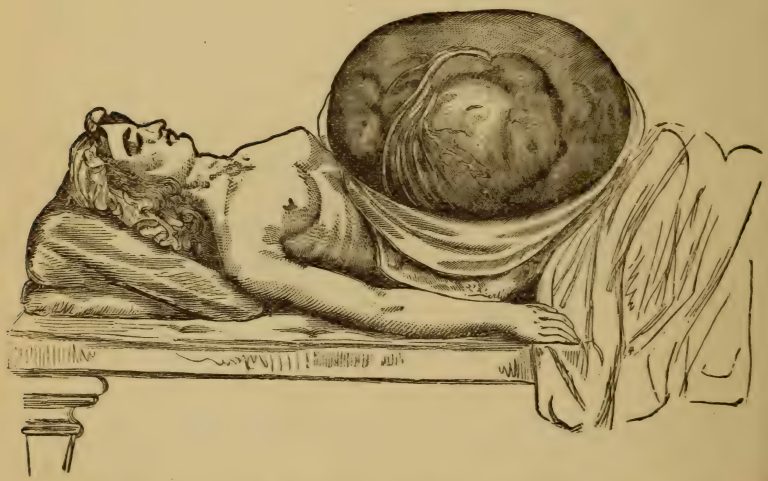
The test as regards dulness or clearness on percussion in the flanks is not an absolute one; for there is nothing to prevent what I have two or three times witnessed, viz., the occurrence of gaseous distension and enlargement of the ascending or descending colon; and supposing such distension to be present in conjunction with ascites, there would be a clear note on percussion in the flanks.

Another distinctive mark between ascitic distension and that due to ovarian disease is the result of percussion practiced over the abdomen *in different positions of the patient.* In ovarian cystic disease, the result of the percussion is the same whether the patient be lying on the back or on the side; but in ascites the fluid is generally at liberty to fall by the force of gravity according as the body is placed, and a particular part of the abdominal surface might be clear and resonant on percussion with the body in one position, and dull when it is placed in another.

* Fig. 234 (from Bright) shows the general aspect of the abdomen in a case of great distension from ovarian dropsy.

The previous history of the case generally offers almost conclusive data if rigorously scrutinized. The fact that the abdominal enlargement began from below, on one side, and with a circumscribed actual perceptible tumor, points to ovarian disease; the absence of such a history would be in favor of ascites. The "one-sided" origin of the tumor is not, however, so often to be made available as is usually stated. In such cases, as observed by the late Dr. Bright, "the growth of this tumor is, on some occasions, so unperceived, that, though it may have originated on one side, it has already risen into the pubic, and even the umbilical region; and when the medical man is first consulted, its lateral origin is with difficulty ascertained. At other times the enlargement is at first slow, and after some indefinite period the increase takes place suddenly, so that in a few months the whole abdomen presents to a common observer the size and appearance of pregnancy far advanced."*

FIG. 235.†



Again, as regards the history, in ovarian disease the enlargement is more often chronic—slower in progress than is the case in ascites; it is, in the case of ascites, attended with greater disturbance of the general health, and, in the latter case, there are generally to be detected signs of serious organic disease of the heart, of the lungs, of the liver, or of the kidneys. Moreover, dropsical effusion into the peritoneal cavity is more often than not associated with similar effusion (anasarca) in the lower extremities. It is in the last stage of ovarian disease only—that is, of the *kind* of ovarian disease now under consideration, and not including cases of *cancerous* disease of ovaries—that anasarca of the lower extrem-

* "Clinical Memoirs on Abdominal Tumors," New Sydenham Society's edition, p. 63.

† Fig. 235 (from Bright's work), *jam. cit.*, represents a large ovarian tumor, the abdominal covering removed.

ities is noticed. The dyspnœa produced by large distension of the abdomen in ovarian disease is generally much less than that attendant on ascitic effusion, because in the latter case the dyspnœa is often of organic, not mechanical origin.

Diagnosis of Ascites from Ascites with a Tumor.—Now and then a tumor is present in the abdomen associated with ascitic fluid, so considerable in quantity that the presence of the tumor is not discoverable, or, at all events, readily so. Kiwisch alludes to a case of ascites associated with *pregnancy*, where the operation of paracentesis was performed, and the trochar passed into a gravid uterus. Other instances are mentioned in Montgomery's work. Recorded experience shows that the question is not easy of solution in many cases. Examination of the uterus from the vagina, examination of the state of the breasts, a careful scrutiny of the circumstances preceding and attending the enlargement, become necessary. Pregnancy may be, as is evident from many recorded facts, very easily overlooked unless inquired after. Thus, a patient the subject of ascites, becoming pregnant, would naturally connect the increasing size of the abdomen with increase in her previous disorder; while the absence of menstruation might be set down by the medical attendant to the same circumstance.

In cases of pregnancy combined with ascites, there is often a dropsical condition of the lower extremities. In advanced ascites, anasarca of the lower extremities is, as is well known, frequent, and the case might be not unreasonably looked upon (by one not aware at least of the possibility of the existence of pregnancy) as one of ascites simply. Dr. Montgomery relates a case where the abdominal parietes were so exceedingly tense, and the quantity of interposed water so considerable, that the outline of the uterus could not be detected, nor the fœtal movements felt, although the patient was seven months pregnant.* It is very important to recollect, in all cases where the woman is in a state for having children, and has an enlarged abdomen, that it is not sufficient at some previous period to have established the diagnosis of ascites. The diagnosis must be made afresh from time to time, and the state of the abdomen must undergo regular investigation; and this is more especially necessary if any operative measures, such as tapping, be contemplated. The observer should always make it a practice before going further to demonstrate to himself that the patient is not pregnant.

Ascites may be associated with other tumors. One of the most common cases is perhaps that in which there is an *ovarian tumor together with ascites*. Usually the distension is not so great as to prevent recognition of the tumor. Still it may be so. This association of ascites and ovarian tumor is more generally observed in cases where the ovarian tumor is of a malignant character than where simple cystic disease is present.

Mesenteric tumor may be associated with ascites, and may be so situated that it closely simulates an ovarian tumor. In such a case, as I have myself had practical proof, an exploratory incision into the abdomen may be the only means for deciding the nature of the case.

In an advanced stage of the disease, ascites, combined with *hydatid disease of the liver and peritoneal cavity*, may give rise to great distension of the abdomen. The history of such a case, but chiefly great enlargement of the liver, would point to the true conclusion, or, at all events,

* *Op. cit.*, pp. 139, 149, 162.

would afford indications sufficient to negative the idea that the enlargement of the abdomen was due to disease of any of the generative organs. Where a tumor is recognizable, the difficulty in diagnosis is necessarily not so great as in the case above supposed.

Lastly, respecting the diagnosis of these cases of extreme distension of the abdomen, where a tumor is suspected to be present, together with ascitic effusion, the operation of tapping renders it easy to substantiate the presence or absence of such tumor. And, in some cases of ovarian dropsy associated with ascites, a preliminary operation of this kind is necessary to enable us more nearly and more conveniently to ascertain the size, position, and relations of the tumor.

Some rare Conditions capable of simulating Ascites or Ovarian Dropsy.—One of the conditions in question is *extreme distension of the bladder* from prolonged retention of urine. A case will be found mentioned by Dr. Gooch,* in which retention of urine was associated with pregnancy, the distended bladder assuming a flattened form, owing to the resistance of the gravid uterus behind it; there was fluctuation, and the case was, in fact, assumed to be one of "dropsy." The case was originally related by Dr. Lowder, who stated that paracentesis was performed, that the trochar passed through the bladder, through the wall of the uterus, and even into the head of the child. Here the mistake probably arose from the presence of fluctuation over a considerable surface; but if percussion had been practiced near the lumbar regions of the abdomen, or even the suspicion of pregnancy had crossed the mind of the observer, the mistake might probably have been avoided.

In some very rare cases, *extreme distension of the uterus by fluid, associated or not with pregnancy*, has simulated ascites.

Cystic Disease of the Abdomen, not of Ovarian Character.—In some rare cases, large cystic growths (of the broad ligament) have been met with simulating ovarian dropsy. It is just within the limits of possibility that such a case might, the cyst being of large size, resemble one of ascites. [I do not think such a mistake could possibly be made by the author of this book, or by any one familiar with the diagnostic points in the two cases.]

GASEOUS DISTENSION.

When the greater part of the abdominal surface is tympanitic, the distension in question generally proceeds from the presence of gas in the intestines, in the stomach, or both. This form of *tympanitis* is witnessed in the advanced stage of fevers of various kinds, in puerperal fever, and under other circumstances. The comparatively sudden occurrence of the enlargement, the perfectly normal state of the abdomen previously, and the results of physical examination generally, render the diagnosis a matter of no difficulty.

CASES SIMULATING PRESENCE OF A TUMOR.

Cases of this kind will be found recorded in the work of Dr. Montgomery. One of the most extraordinary was the case of a woman, who in the year 1828, was operated upon in Berlin, under the idea that the case was one of extra-uterine pregnancy; on cutting into the abdomen no

* Quoted also by Montgomery, *op. cit.*, p. 324.

tumor and no enlargement of any viscus was detected. The abdomen has been opened with the intention of removing ovarian tumors, no tumor of any kind being discoverable. And the case is very far from uncommon in which women are supposed to be pregnant, and to have a tumor in the abdomen, when the event completely falsifies the diagnosis. In many cases, where such mistakes have been made, it is easy to see that sufficient care was not taken in substantiating the presence of a tumor, in defining its limits, etc.; but in some instances appearances were evidently calculated to mislead.

So-called "Phantom" Tumors.—The cases which present most difficulty are those in which an abdominal tumor is simulated, in hysterical women, the abdominal muscles being contracted in such a manner as to give the impression of a tumor to the hand of the observer. The tumor has this peculiarity: "If," as Dr. Montgomery remarks, "the patient can be made to forget that she is under examination, by completely diverting her attention, as by keeping her in conversation on some subject unconnected with her own case or state, while, at the same time, the hand is kept pretty firmly pressed on the abdomen, the tension gradually relaxes, the size diminishes, and all sensation of a tumor is lost."* Change of position may succeed in producing this disappearance of the tumor; but the reality of the tumor is most completely tested under the influence of an anæsthetic. The hand is then allowed to sink inward at the point where previously the tumor appeared to be situated. When the abdomen is covered with an undue quantity of fat—a condition often also associated with presence of fat in the omentum—the difficulty the observer experiences in satisfying himself that no tumor is actually present becomes more considerable; and etherization may, in such cases, be quite essential to making the diagnosis. It is not absolutely certain how the deceptive appearances of a tumor are actually produced, but it is probable that, in most cases, they are due to partial contractions of the recti abdominis muscles, a particular segment of the muscles being in a state of chronic contraction, and forming a rounded mass under the hand.

Having cleared up any doubt as to whether there be actually a tumor or not, the further steps to be taken will now be considered.

It will be found convenient for purposes of diagnosis to begin with determining, by physical examination of the tumor, under which of the following heads it should be placed; and, this elementary diagnosis having been made, to pursue further inquiries in the direction thus necessarily indicated: (A) The tumor proceeds from, or is connected with, the pelvic cavity; (B) The tumor is not connected with, or distinctly traceable into, the pelvic cavity.

(A) TUMORS WHICH ARE TRACEABLE, OR MAY APPEAR TO BE TRACEABLE, INTO THE PELVIS.

Enlargement of the uterus, from pregnancy, fibrous tumor, etc.
Ovarian cystic disease or tumor.
Peri-uterine hæmatocele.
Distension of the urinary bladder.
Pelvic cellulitis and abscess.
Fæcal tumor.

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* *Op. cit.*, p. 398.

The more uncommon causes are—
Enlargement and distension of Fallopian tube.
Extra-uterine pregnancy (usually).
Sub-peritoneal cysts.
Cysts or solid tumors in omentum.
Fibrous, cancerous, or osseous growths from pelvic bones.
Hydatid tumor.
Enlargement of spleen (when the spleen is so enlarged as to extend into the pelvis).
Cancer of peritoneum.
Cysts or tumors connected with the kidneys.
Distension of ureter.
Enlargement of liver.
Retained encysted fœtus—which may also come under the next head (B).
Cysts of the broad ligament (Wolffian cysts).

(B) TUMORS NOT TRACEABLE, NECESSARILY SO AT LEAST, INTO THE PELVIS.

Disease of the liver, giving rise to enlargement of the organ, hydatid tumor, etc.
Enlargement of the spleen.
Hydatid tumors in cavity of abdomen.
Fæcal tumor.
Fibrous tumor of the uterus, pedunculated.
Cancer of peritoneum.
Fat in omentum.
Enlargement, etc., of kidneys.
Movable kidney.

It will generally be found comparatively easy to determine the series to which the tumor before us belongs. Commencing at the most prominent part of the tumor, and pressing gently but firmly through the abdominal parietes on its surface, the continuity of the surface in question is to be traced in all directions, and the limits of the same accurately made out. Thus, a tumor, the most prominent part of which is just above the umbilicus, may be traced upward from that point to the margin of the ribs on the right side, being at that point not separable from the liver; while, on endeavoring to trace it downward, it may be found to cease abruptly at the umbilicus, or a little below it. Such a tumor would belong to the second of the above series. The fact that the tumor ceases at the point indicated may be made out simply by palpation, the abdominal wall being lax or thin; but palpation alone may not be sufficient to establish this when the opposite state of things prevails, and percussion is then of service. Thus—to take again the above illustration—the tumor being hard, firm, and dull on percussion superiorly, the fact that at a particular point this dulness is exchanged for a tympanitic note, this tympanitic note being identical with that obtained over the lower part of the abdomen generally, would lead to the desired conclusion as to the lower limit of the tumor. Again, in the case of a tumor presenting the fluctuation sign, the limit of the fluctuation would of course indicate the limit of the tumor; it would be necessary to recollect that, in the case of a tumor of a composite character, fluctuation might cease at a particular point without this necessarily indicating that this point was the

boundary of the tumor. And with reference to the particular sign, fluctuation, there is this general caution to be given—that it by no means follows, because a tumor contains fluid, that fluctuation should be perceivable when the walls of the cavity containing the fluid are very tightly stretched, fluctuation may be entirely absent. Lastly, in determining whether the tumor proceeds or not from the pelvis, the history of the case may give important information. This information, however, is very often found to be either wanting, or so devoid of accuracy as to be practically worthless.

TUMORS MORE RARELY MET WITH.

(*a*) *Traceable into the Pelvis.*

Enlargement of the Liver.—In a case of this kind, careful examination shows a perfect continuity of the tumor with the liver above. The tumor is hard, resistant. The history of the case is agreeable with the theory that the tumor originated in the liver. But although simple enlargement to a considerable extent is rare, cases are not so uncommon in which a tumor growing from the liver extends downward even as far as the pelvis, or which is, at all events, apparently continuous with tumors which do so extend into the pelvis (see next paragraph).

Hydatid disease of the liver may give rise to a tumor extending from the liver into the pelvis, and the abdomen may become enormously distended by the parasitic growth in question. In a very remarkable case related by Dr. Bright,* the hydatids formed "round, well-defined elastic tumors" all over the abdomen, and in places forming elevations visible to the eye. The patient's age was 14. The hydatids were first developed in connection with the liver. The first sign of disease was the feeling a hard lump in the right side below the false ribs. The disease rapidly progressed, general emaciation and constantly increasing abdominal enlargement being the chief symptoms. There was dulness on percussion all over the abdomen, except at one part, just to the left of the umbilicus. It would seem difficult to avoid recognizing the nature of an abdominal enlargement due to this cause; an ovarian tumor reaching to the liver, and presenting rounded projections due to the contained cysts, might be possibly mistaken for it by an inexperienced observer. But an ovarian tumor growing to such a size as this would generally have a history essentially different. The ovarian tumor would have grown from below upward, and at some previous time would have been limited to the lower part of the abdomen. This distinction may fail in some cases. The physical characters of an ovarian tumor of this magnitude will be given further on. Here also may be mentioned an interesting case related by Dr. Bright, in which the tumor was due to hydatids, but closely simulated an ovarian tumor. The woman was 54 years old, and presented an enlargement of the abdomen, dating from nine or ten years previously, but only very obviously noticed for three years. The abdomen "was greatly enlarged; the upper two thirds occupied by an irregular tumor, indistinctly fluctuating, and, in various parts, somewhat tender on pressure; the lower part of the abdomen was also occupied by a fluctuating tumor, apparently a large cyst arising from the pelvis. The intervening space was soft, and was the only part which gave a clear or tympanitic

* *Op. cit.*, p. 30.

sound on percussion." A drawing accompanies the description of the case. "From its peculiar and irregular form," Dr. Bright concluded "that it consisted either of hydatids extensively distributed, or was an ovarian tumor; and if the latter—which, from its very singular form, and more particularly from the existence of the upper portion so separated from the lower, I could scarcely believe—I supposed that it must be one of those complex and malignant forms of disease. . . ."* The case turned out to be one of hydatids. There were two large cysts, one above and one below, the upper one incorporated with the liver, and between and in front of the two was stretched the transverse colon. In a case under my observation in University College Hospital, first under my own care and then under Sir William Jenner, considerable doubts as to its nature were dissipated by an exploratory puncture. It was an enchondromatous tumor of very great size. A noticeable feature in this instance was the growth of a portion of the tumor backward toward the loin, a position which, it may be perhaps stated, is never taken by an ovarian tumor. Cases of this kind are extremely rare.

Cancerous disease of the abdominal viscera, above the pelvis, may give rise to a tumor which is found to extend downward as far as the pelvis. Practically, however, such a tumor can hardly be confounded with any of the tumors with which we are more particularly concerned. In *cancer of the kidney* the lower margin of the tumor would, even in extreme cases, be felt above the brim of the pelvis, unless distension of the abdomen from ascites prevented it. "*Colloid cancer of the omentum*," says Dr. Walshe, "spreading like a sort of apron in front of the intestines, gives rise to dull percussion sound in proportion to its extent."† This is a very rare disease. *Cancer of the post peritoneal cellular tissue*, also a very rare affection, may give rise to a tumor slow in growth, and which may, moreover, grow downward into the pelvis. ‡ The presence of nodules of a cancerous nature, perceivable in the abdominal walls externally, is an important diagnostic sign, although it is one not by any means always observed.

Enlargement of the spleen, the organ attaining such a size as to extend into the pelvis—an occurrence which must be very rare—could hardly be mistaken for an ovarian or uterine tumor, if the smallest pains were taken in investigating the history of the case.

Cysts or Tumors connected with the Kidneys.—A case is detailed by Dr. Bright, in which a large cyst containing puriform matter, and connected with the left kidney, simulated disease of the ovary. The patient was married, æt. 34. "For about three years she had a tumor on the left side of the abdomen; the exact situation of the part at which it commenced is not ascertained, but it appeared to have been sufficiently low down to have excited a suspicion that it depended on the ovary." After death, "a large but soft tumor was seen occupying the greater part of the left lumbar and iliac regions." It was an enlargement of the kidney, and had, when cut into, the appearance of a membranous cyst, the walls of which were an eighth of an inch thick. It contained dirty, discolored, watery pus. § I saw, some time since, with Mr. Scott, a case of very considerable abdominal enlargement simulating multilocular ovarian disease, which proved to be one of cystic disease of the kidney.

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* *Op. cit.*, p. 13.
† Ibid., p. 310.
‡ Ibid., p. 311.
§ *Loc. cit.*, p. 223.

Mr. Spencer Wells,* in a pamphlet "On the Diagnosis of Renal from Ovarian Cysts and Tumors," has described cases illustrative of this important subject, with conclusious based thereon. In one of the cases a cystic degeneration of the left kidney was taken to be a cyst of the left ovary. It was very large, occupied the whole left side of the abdomen, and had been previously tapped, and a quantity of dark discolored fluid, like pea-soup, removed. The whole aspect of the case much resembled that of ovarian disease, but a cord passed over the middle of the tumor, which was found to be the descending colon. Mr. Wells gives another case of soft cancer of the right kidney in a girl four years old, which had been supposed to be ovarian, but which was rightly diagnosticated. Also a case of pyonephrosis of the right kidney, due to impaction of calculi in the ureter, which was relieved by an abdominal tapping. Regarding the diagnostic data in such cases, Mr. Wells points out that ovarian tumors are generally in *front* of the intestines, renal ones behind them, but this rule is open to exceptions; that discovery of intestine in front of a doubtful tumor should induce examination of the urine, blood, pus, or albumen being generally detected in renal disease; that the intestine may not be recognized as such unless care be exercised; that fluid discharged from a doubtful cyst should be carefully examined for ordinary products; that the renal disease grows downward; the ovarian upward; that it is only a very small ovarian tumor with a long pedicle which could be mistaken for a floating or movable kidney.

In cases of *distension of the ureter*, a tumor may be detected on one side near the vertebral column, but it does not appear that such a tumor has ever been confounded with tumor of pelvic origin: ordinarily the circumstances are such that tumors connected with the kidneys or ureters are not confounded with those originating in the pelvis.

Sub-peritoneal Cystic Tumor.—A very rare and exceptional case is that in which cysts situated externally to the peritoneum grow and form tumors capable of simulating ovarian cysts. Such a case is alluded to by Kiwisch.† The tumor formed gradually, attained a large size, was repeatedly tapped, and large quantities of fluid evacuated. The patient's age was 20. And the tumor first appeared after suppression of menstruation, the suppression occurring very soon after menstruation had begun. After death, three large tumors—one composed of a large cyst, and the two others of cysts together with fibrous tissue—were found behind the peritoneal membrane, occupying the lumbar and hypochondriac regions, and extending down into the pelvis.

Somewhat analogous to this is a case reported by Mr. Safford Lee, ‡ in which a large tumor of the abdomen had existed for twenty-five years. It at last completely filled the abdomen and killed the patient. It was found to have commenced on the left side, just under the pancreas, but below the peritoneum, so that it rested on the posterior walling of the abdomen. A narrow pedicle, six inches long, of the size of a quill, connected it with the uterus. It was filled with turbid fluid, balls of fat and hair, calcareous matter, and a mass containing teeth and bones, strongly resembling an imperfect fœtus. This appears to have been a case of "included fœtus."

Cysts of Omentum.—Mr. Safford Lee reports a case which was under the care of Dr. A. T. Thompson. The patient had been tapped forty-eight

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* *Dubl. Quart. Med. Journ.*, Feb., 1867.
† *Klin. Vortr.*, bd. ii. (by Scanzoni), p. 327.
‡ "On Tumors of the Uterus," etc., p. 124.

times. The tumor began on the right side of the abdomen. After death it was found to have originated in the omentum close by the pancreas, and was attached by a long thin portion to the uterus, but was entirely unconnected with the ovaries. At the upper part of the abdominal cavity, attached to the peritoneal surface, were a number of well-defined cysts containing a clear fluid.*

Retained Encysted Fœtus.—In some very uncommon cases, the fœtus, the product of an extra-uterine pregnancy, dies, having attained a certain stage of maturity, and remains, enclosed in a kind of cyst, in the abdomen of the mother, for a time which varies from a few weeks to many years. The history of these cases is necessarily peculiar and characteristic. The woman states that at a certain time she was pregnant, that the symptoms of pregnancy advanced pretty regularly, that at the time pregnancy should have terminated pains set in, and these, after lasting a certain time, went off, no delivery having occurred, and that the tumor which is felt through the abdominal walls dates from the period in question. Such a tumor is not incompatible with further pregnancy and healthy delivery, instances being known of women bearing mature and healthy children, the mummified body of the extra-uterine fœtus still remaining within the abdomen. The tumor in these cases is usually low down in the pelvis, or at all events partially so, and it is usually recognizable by vaginal examination.

Fibrous, cancerous, or osseous tumors, growing from the pelvic bones inward, may give rise to tumors perceivable through the abdominal walls. The firmness of these tumors, their want of mobility, and other physical characters, render their diagnosis from other, more common, abdominal and pelvic tumors easy. They are excessively rare.

Of the conditions which have now been mentioned—viz., enlargement of the liver, hydatid disease of the liver, cancerous disease of the abdominal viscera, or in the abdominal walls, enlargement of the spleen, cysts, etc., originating in the kidneys or uterus, cystic tumors behind the peritoneum or the omentum, retained encysted fœtus, fibrous or osseous growths from the pelvic bones—some are exceedingly rare, others are more common. One distinction between these tumors and those originating in the generative organs is very important, and one which can generally be relied upon, viz., that when the tumor originates in the generative organs, the vaginal examination shows some displacement, or some abnormal condition, of the uterus, or is the means of detecting a tumor in the pelvis. This negative evidence is of great weight.

The tumors next to be considered are met with rather more frequently.

Tumors of the Fallopian Tubes.—These conditions have been already alluded to (see p. 320). When they attain a certain size, they are perceivable also by examination of the hypogastric region of the abdomen, and even when they are of no considerable size, they may be felt in this position if the abdominal walls be thin and non-resistant. Tumors of the Fallopian tubes exceeding the size of an apple are rare, but it should be known that they *may* attain so large a size as to be capable of being mistaken for ovarian tumors. The tumor is generally elongated or pyriform in shape, and movable, and there may be a tumor on both sides. The position in which the tumor is felt is just above the groin—behind and below Poupart's ligament. The history of the progress of the tumor is generally diagnostic, to a certain extent, of its nature. Cases of tubal

*"On Tumors of the Uterus," etc., p. 123.

pregnancy are very rarely diagnosticated; inasmuch as rupture of the tube takes place before anything wrong is suspected; and if the pregnancy proceed to a later period, the case is usually looked upon as one of normal gestation. There are no physical signs by which a case of very extreme dropsical distension of one tube could be certainly distinguished from an ovarian tumor. In such a case the history would probably throw some light on the subject.

TUMORS MORE RARELY MET WITH.

(*b*) *Not traceable into the Pelvis.*

It will not be necessary to enter at any length into the consideration of the diagnosis of tumors in the abdomen not traceable into the pelvis, inasmuch as the subject is one scarcely coming within the compass of the present work. There are, however, some tumors of the abdomen which may not be traceable into the pelvis, and yet have their origin in the generative organs, concerning which some mention is required.

Fibrous tumors of the uterus sometimes become pedunculated, and the pedicle elongated to such an extent that they enjoy great mobility and freedom of movement. It might be difficult to say of such a tumor very positively whether it belonged to the uterus or to the ovary.

The fibroid tumors of the uterus, when growing from its peritoneal surface, may become detached from the organ, and remain fixed at any part of the abdominal parietes. When so fixed and separated from the uterus, the diagnosis of the nature of such a tumor would be necessarily difficult. It appears that the ovary also may become separated from its attachment by twisting of or dragging on the Fallopian tube, and that it may similarly become attached to some other part of the abdominal wall. The occasional occurrence of separation of fibroid tumors or of the ovary, from their normal attachment, is a circumstance to which attention has been directed by Rokitansky * and Turner. †

A pedunculated fibroid tumor of the uterus might be confounded with *movable kidney*, the rounded shape and the firm feel of the tumor being observable in both cases. The diagnosis of the fibroid tumor, detached and transplanted as above pointed out, would not be easily made out.

Cases in which the *omentum* is the seat of a considerable deposition of *fat* occasionally create embarrassment as to their diagnosis. It might be difficult to ascertain whether the tumor perceivable was actually traceable into the pelvis or not, owing to the usually associated fatty condition of the abdominal parietes; such tumors are most liable to be confounded with pregnancy, as already pointed out.

An exceptional case here requiring mention is the presence of a tumor due to an *extra-uterine fœtation*, and so situated as to give the idea that it is not traceable into the pelvis.

A difficulty is more frequently experienced in determining whether the tumor proceeds from the pelvis or not in cases where solid tumors of the uterus or ovary are associated wtth *ascites* to an extreme degree. This class of cases has already been alluded to, in speaking of the diagnosis of the causes of considerable enlargement of the abdomen with the fluctuation sign present.

Some cases of *fæcal tumor* may give rise to difficulty when the tumor

* See Schmidt's "Jahrb.," vol. cx., p. 306.
† *Edin. Med. Journ.*, Feb., 1861, p. 698.

is situated low down. The observations already made on the diagnosis of fæcal tumor here again apply.

Cancerous or cystic disease of the omentum, forming a tumor of considerable size, may closely simulate tumor originating in the pelvis. Ovariotomy has been attempted in some such cases. The surest means, perhaps, of avoiding similar errors of diagnosis in future is to indicate, as has now been done, the possibility of their being committed. If ascites were superadded in such a case, the difficulty would be greater. Attention to mode of growth of the tumor would be most likely to give satisfactory information.

In all cases where doubt exists as to whether the tumor extends into the pelvis, the history of the case is of great consequence. It generally happens that tumors of ovarian and uterine origin do, at some period or other of their growth, give rise to what may be termed pelvic symptoms —difficulty in defæcation or micturition, pains in the lower limbs, etc., etc., and absence of such pelvic symptoms, therefore, would be against the theory of pelvic origin of the tumor, though on these grounds alone it would not be safe to come to a conclusion. We should, however, certainly hesitate to perform ovariotomy in a case where pelvic symptoms had been absent from first to last, unless there were very good grounds for believing the tumor to be ovarian.

TUMORS TRACEABLE INTO THE PELVIS MORE COMMONLY OBSERVED.

Pelvic Cellulitis and Abscess.—A tumor rising up, sometimes a considerable distance, above the pelvic brim, may be caused by inflammation originating in the pelvic cellular tissue, generally following labor, or abortion, or wounds or injuries of the pelvic viscera. (See Pelvic Cellulitis.)

Peri-uterine Hæmatoocle.—The tumor arising from this may present features very much like those observed in pelvic cellulitis. The diagnosis has been considered in the chapter on Peri-uterine Hæmatocele.

Fæcal Tumor.—A tumor due to fæces accumulated at any particular part of the intestinal tract may extend into the pelvis and simulate a tumor growing from that part. A fæcal tumor is known by its irregular shape, by its doughy feel; it is dull on percussion at one part, and clear at another (from presence of flatus); the state of the bowels also is peculiar, great costiveness being present; and, moreover, the tumor disappears, or partially so, on administration of purgatives. Dr. Walshe gives an important caution, however, in reference to the uncertainty of such deduction, viz., that occasionally the solid matters cling to the wall of the bowel, leaving a passage in the centre; the tumor remains, and is a fæcal tumor, while the patient is passing daily liquid stools.*

The most important of the tumors traceable into the pelvis remain for consideration, and we have now to determine whether the tumor which is present be due to

1. Enlargement of the uterus, including pregnancy, normal and abnormal tumors, etc., of the uterus;
2. Ovarian tumor; or
3. Distension of the bladder.

The tumors of the abdomen, respecting which a diagnosis is most fre-

* Walshe, *op. cit.*, p. 315.

quently required, belong to this series, the cases not so included being, comparatively speaking, very few in number.

Distension of the Bladder.—The tumor due to this cause is always (in uncomplicated cases) of recent formation, and it dates back but a short time. A very instructive case, and one illustrating well the nature of the difficulties liable to be met with in determining this point, came under my care some years since.

A woman, æt. 46, married, mother of one child, 17 years old, presented herself at the hospital with an enlargement of the abdomen of three weeks' duration, legs very œdematous, the abdominal wall externally presenting enlarged lymphatics with great puffiness of the skin covering the hypogastric and inguinal regions. There was a distinct well-defined tumor rising from the pelvis and reaching to three inches above the umbilicus, not tender, hard, firm, not fluctuating, giving the impression at first sight of being an ovarian cyst. Vaginal examination was difficult, owing to the extreme pain it occasioned; the vaginal walls were protruded in a swollen œdematous state, and in the form of tumors, through the vulvar aperture. The os uteri, however, was felt to be high up behind the pubes, and a round, firmer, hard tumor occupied the pelvis itself. There was, judging from the history of the case, no evidence of pregnancy. She stated that she passed water freely, and had done so for the last three weeks. The examination *per vaginam* was so difficult as to be unsatisfactory; the *primâ facie* view of the case was that it was an instance of rapidly growing ovarian cystic disease. A catheter was introduced into the bladder. The discovery was then made that the tumor was due to an enormously distended bladder, and nearly six pints of urine, slightly, but not greatly, offensive, were drawn off, the tumor above the pubes entirely subsiding. The further information was then obtained, by examination, that the uterus was enlarged, that a large fibrous growth occupied the posterior wall of this organ, that the whole organ was retroverted in the pelvis, and that this was the cause of the retention of urine. The fibrous growth was situated chiefly external to the uterine wall, and altogether the uterus was about the size of the gravid uterus of between three and four months. Further inquiry now elicited some interesting facts in the history of the case, but which had not been alluded to by the patient until they were specially asked for. It appeared that three days before the abdomen began to swell she had slipped downstairs over five or six steps, and strained herself in so doing, but she took no notice of this, as no immediate inconvenience resulted. There was a little difficulty in micturition, but nothing marked, and the retention had been disguised by the fact that there had been a more or less constant overflow. The involuntary micturition was naturally enough misinterpreted by the patient, and was not mentioned until specifically inquired after. The uterus had become retroverted, the tumor sinking down into the sacral concavity, and the pressure and dragging on the neck of the bladder occasioned the retention.

The particulars of this case sufficiently illustrate the nature of the inquiries, and the mode of examination necessary to be made. The case just described is somewhat analogous to others which have been recorded. It might be said perhaps that the duration of the tumor in the case above related (only three weeks) would at once have settled the question as against ovarian disease; but in some cases it has been found that ovarian disease progresses with extreme rapidity. Kiwisch says, "We have seen a cyst, from the size of a fist to that of a child's head,

appear in the course of fourteen to twenty-four days, accompanied by severe local and general symptoms."* Further, in dealing with the statements of patients as to the duration of a particular condition we are always treading on uncertain ground. There was nothing, for instance, in the above case to prove that the duration of the hypogastric tumor dated back from only three weeks previous. It might well have existed, although much smaller, for some time antecedently.

The diagnosis between ovarian and uterine tumors will be considered at length in the chapters on Diseases of the Ovaries; a few remarks only on the subject will now be made.

The diagnosis, as made out by an abdominal examination, should be corrected and checked, so to speak, by a vaginal one; a positive opinion should hardly ever be given as to the nature of any case, however clear it may appear to be, simply on the results obtained by the former method of investigation. Mistakes, ludicrous or serious, or both, have not by any means unfrequently followed neglect of this important rule.

ENLARGEMENT OF THE UTERUS—VARIOUS CAUSES, INCLUDING PREGNANCY.

The causes of enlargement or tumor of the uterus are the following:

Simple hypertrophy of the uterus.

Pregnancy, normal and abnormal.

Uterine polypus and fibroid tumor of the uterus.

Retention of the menstrual or other fluid in the uterine cavity (hæmatometra and hydrometra).

Gaseous distension of uterus (physometra).

Abscess of the uterus.

Tubercle of the uterus.

Carcinoma of the fundus uteri.

Fibro-cystic tumor of uterus.

The least common of these pathological conditions are those which have been placed last on the list. The most common giving rise to uterine tumor are *pregnancy*, *fibrous tumor*, and *fibrous polypus of the uterus*. By far the majority of tumors in the abdomen, of any considerable size, and which are uterine in their nature, are found to be one of these three; and in practice, therefore, the diagnosis of these, one from the other, is of the most importance. The diagnosis of these three, one from the other, is far easier than the diagnosis of one or each of them from certain tumors of the ovaries, as will be presently shown.

DISTENSION OF THE UTERUS BY FLUID.

The cases coming under this head are some of the most important with which we have to deal, and their diagnosis possesses great interest. If the distension be at all considerable, the tumor produced by it is readily recognized above the pubes, and also from the vagina. Fluctuation is usually present when the tumor is large, but it is not a sign which can be greatly depended upon. One form of distension to which the uterus is liable is that produced by *retention of the menstrual fluid*, in young women who have never menstruated. In women who have menstruated

* "Translation by Clay," p. 112.

also, menstrual retention may occur in consequence of the *os uteri or the vaginal canal becoming occluded*, as after parturition, or by tumors in the canal of the cervix uteri. (See Examination of Uterus from Vagina.) Then there are cases in which *purulent collections* from various causes take place in the uterus, or in which fluid of a more or less *serous* character is found distending the organ. Lastly, cases of *pregnancy;* for although, normally, the amount of fluid in the uterus under such circumstances does not entitle the "enlargement of the uterus due to pregnancy" to be considered in this place, yet occasionally the quantity of fluid in the uterus, together with the fœtus, is very considerable indeed, and it has even been sufficient to obscure the diagnosis of pregnancy in some instances.

The diagnosis of these various forms of distension of the uterus is generally to be made out by a careful consideration of the attending circumstances and of the history of the case.

In cases where the woman is pregnant, but the *quantity of liquor amnii is very excessive*, it is just possible that on the first view of the case some difficulties might present themselves in the way of the diagnosis. A slight investigation of the history of the case, its progress and symptoms, would very shortly indicate the true explanation of the matter, and the signs of pregnancy revealed by a vaginal examination and otherwise would generally be conclusive as to that condition. Cases of this kind have been occasionally rendered additionally obscure by dropsical effusion into the cavity of the abdomen.

PREGNANCY.

The Feel of the Tumor due to Gravid Uterus.—It is during and after the fourth month that we may be able to feel the gravid uterus above the pubes. Up to the fifth month the tumor so felt is tolerably firm, not sensitive, giving the impression of a rounded, smooth mass. After this period the tumor is usually felt to be softer, this being due to fluid within it, and the degree of softness will vary with the amount of the fluid. There is often an obscure fluctuation perceivable. Soon after the fifth month harder masses or nodulations may be felt within the tumor, which gradually become more pronounced as it grows, these being the limbs or other parts of the body of the fœtus which may come into contact with the uterine wall. If, as occasionally happens, the amount of liquor amnii is very small, the uterine tumor is felt to be everywhere hard and more resistant, but the elevations and depressions corresponding to the irregularities presented by the fœtal surface are still to be detected. Usually it is necessary to press inward with the point of the finger to detect the elevations in question, but now and then both the abdominal and the uterine walls are so lax that the members or other parts of the fœtus are more easily felt on application of the hand.

In cases where the uterine tumor is not to be felt above the pubes, from fat, resistance, or other causes, there is a peculiar hardness and fulness of the region in question. The importance of engaging the patient in conversation while endeavoring to ascertain the physical characters of the tumor should be now kept in view. It will be found exceedingly useful also to make the patient inspire and expire very deeply several times in succession, while the hand rapidly follows the movement of the abdominal walls. Often, in this way, a tumor becomes recognizable, the existence of which would be otherwise problematical.

As regards the surface of the gravid uterus, it is usually perfectly smooth.

The discovery of the limbs or other parts of the fœtus through the abdominal walls is not usually available as a diagnostic sign of pregnancy until a late period, when other equally significant data are also obtainable. But there are other signs of pregnancy obtainable at an early period, by simply feeling the tumor, which are of great importance—viz., the *feeling of the movements of the fœtus within the uterus.* During the fifth month frequently, but after that time in the majority of cases, if the hand be laid smoothly over the abdomen and the suspected tumor, and gently pressed against it, a sharp, slight, but decisive tap is felt, due to the movement of the fœtus within. This is felt with more or less ease in different cases. The woman may be undoubtedly pregnant, and with a live child, this sign being yet undiscoverable; but if a little patience be exercised, by manipulation and pressure the slight impulse will be perceived. It is often felt immediately on applying the hand, and is only felt again on removing and reapplying it. It is capable of being simulated by that sudden and spasmodic contraction of the recti muscles occasionally liable to be set up by the application of the hand in hysterical subjects; possibly also by the peristaltic movements of the intestines. The celebrated Joanna Southcott appears to have deceived her medical attendants by thus contracting the recti muscles. They believed that she really was pregnant. It has been recommended that the hand should be dipped in cold water in order more easily to excite fœtal movements, but this is unnecessary, and the cold diminishes the acuteness of the sense of touch, while it is very likely to induce spasmodic contractions of the recti muscles, which are almost certain to be mistaken for fœtal movements (Tanner).

There is still another sign of pregnancy derivable from palpation of the tumor through the abdominal walls, viz., hypogastric repercussion or ballottement. The patient is to be placed on the side, or, as Dr. Montgomery recommends, on the knees, "with the shoulders depressed, so that the fœtus may be caused to gravitate toward the fundus uteri, which is also brought into more complete contact with the abdominal parietes." The fingers are then to be pressed against the most dependent part of the tumor firmly but gently, and then very suddenly this pressure is to be withdrawn. In the act of withdrawing the pressure the fœtus is felt to fall against the retiring finger, and this constitutes the sign in question. It is identical with the internal ballottement previously described. (See p. 499.) Without placing the patient in this position, this external ballottement is often practicable when the pregnancy is far advanced—that is to say, the patient lying on the back, pressure is steadily made by one hand on one side of the uterus, and manipulation by the other hand is performed on the opposite side of the uterus, as above directed.

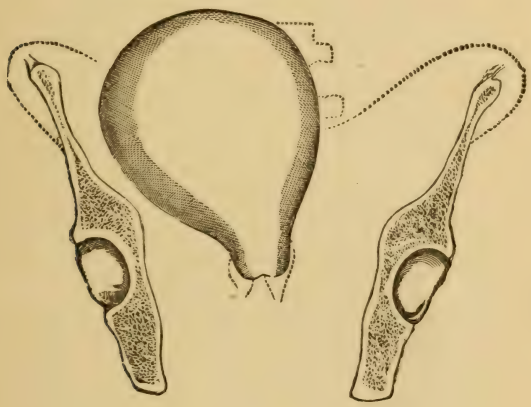
The value of this ballottement as a sign of pregnancy is great, but if the abdomen contained a solid pedunculated movable tumor, together with ascitic effusion, the sensation described above might be communicated. The internal ballottement from the vagina is not so liable to be simulated.

The Size and Position of the Tumor constituted by the Gravid Uterus.—Under ordinary circumstances the gravid uterus is, at the end of the third or beginning of the fourth month, so large that the fundus can be perceived above the brim of the pelvis, and during the succeeding months, unless interfered with by some abnormal occurrence, it rises progres-

sively higher and higher. In the sixth month the upper border of the uterine tumor is as high as the umbilicus. In the seventh month it reaches two inches or more above this point, and at the end of the eighth month it reaches the ensiform cartilage. After this time—that is to say, during the ninth month—although the uterine tumor increases in size, this increase does not show itself so much in the upward direction as laterally and anteriorly; and during the last week or two there is often an actual sinking of the tumor to a slight extent. (Fig. 236 shows a not uncommon position of the gravid uterus at the sixth month.)

As regards the *position* of the tumor, the uterus at first, and during the first two or three months, occupies a median position—until it becomes bulky and rises into the abdomen. But once in the abdomen, it generally occupies for the next two months—that is to say, speaking broadly,

FIG. 236.



during the fifth, sixth, and part of the seventh months—a lateral position, being most frequently found on the right side of the abdomen. The degree of the lateral displacement varies in different cases; the tumor may be, and has been, overlooked, owing to the observer not being aware of this normal lateral deviation. (See Fig. 236.)

The most important circumstance to bear in mind in deciding for or against pregnancy—size and position of the tumor alone considered—is the *relation which we find to subsist between the size and the duration of the tumor*. In pregnancy there is a progressive increase in the size of the tumor.

Further, we can frequently pronounce very positively, from the result of our examination, that there is no pregnancy. And the larger number of cases that come before us are cases in which the determination of this single point is quite sufficient. Thus, a woman is suspected to be pregnant, and it is known that if she be pregnant the pregnancy must have advanced—say six months. We examine and find absolutely no tumor in the abdomen, which is possibly fat and tympanitic. We can

say, with this fact before us, that pregnancy is impossible—pregnancy of the duration supposed, at all events.

In many cases practitioners—some of them men of high standing and reputation—have been led to form erroneous conclusions respecting the existence of pregnancy. Often the mistake has been committed by accepting the patient's statements, and making no examination, or a very superficial one. The account given by the patient and the symptoms observed not unfrequently very closely resemble those in pregnancy; so much so, indeed, that by many writers the condition has received a special name, "spurious pregnancy," "pseudocyesis" (Good); and the symptoms under these circumstances may be such that they deceive even patients who have often borne children. Accounts of such cases will be found in most modern text-books—Montgomery, Tanner, and others. The only safe rule to be followed is never to consider the diagnosis as actually established, unless some physical sign on which we can place reliance as a sign of pregnancy be detected. What these reliable signs are will be pointed out in their due order. The foregoing observations apply to ordinary cases. Here, however, must be mentioned a few of the more important exceptional cases, in which deductions, drawn as directed, might prove fallacious.

Thus, a woman ceases to menstruate for a period of three months; then at the end of the three months more she becomes pregnant, and three months later she informs her medical attendant that she is certainly six months pregnant. An examination is made, but no tumor is detected above the pubes, and the erroneous opinion is given that the patient is deceived, and that she cannot be pregnant. Cases of this kind are not very uncommon. [The diagnosis of pregnancy at three months is by no means difficult. By the bi-manual method the size of the uterine tumor is always easily mapped out. Then is it a uterine fibroid or pregnancy? In pregnancy, even at this early stage, the cervix is softer, and we have the bluish color of the vagina, not so marked as at the fourth month. These, with the history of the case, leave but little room for doubt.] Another instance is that in which a woman becomes pregnant, the fœtus dies (at the age, for instance, of three months), but is not expelled. The woman does not increase in size, and for this reason the case may be supposed not to have been a case of pregnancy at all. This case is not a common one, however. Another is that in which the uterus having become impregnated grows with inordinate rapidity, and we find the uterine tumor very much larger than can be accounted for on the patient's statement of the history of her case. Such is sometimes the case in *hydatidiform* pregnancy, of which the following is an instructive instance:

The patient, aged 28, had been married three months, was last unwell the week previous to her marriage. Three weeks before I saw her, she experienced a slight strain in getting over a stile, and dating from that period there had been a slight "show." For a fortnight she had been treated as for an impending miscarriage. The day before I saw her a severe flooding occurred, soon after which I was requested to visit her. On seeing the patient, I was struck with the great size of the abdomen; a tumor, evidently the uterus, extended to two inches above the umbilicus. The first impression produced on my mind was that the pregnancy must have advanced farther than the time stated—three months. On passing the finger, and subsequently the hand, into the os uteri, the organ was found distended with a mass sufficient to half fill a

wash-hand basin, and composed of an ovum which had undergone the hydatidiform degeneration.*

The facts of this case bear out the observations of Montgomery and other writers, that in this peculiar affection, an unusually rapid increase in the size of the uterus may be observed, a rate of increase not observed in normal pregnancy. Dr. Moorhead has recorded a case in many respects resembling the above.†

In cases of *retroversion of the gravid uterus* (see Fig. 237) there is a fallacy liable to rise in reference to the diagnosis, although other circumstances usually lead to the detection of the real nature of the case. The tumor which should be above the pubes is then absent, but it is usually replaced by another—the distended bladder. And it is just possible that the observer, finding a tumor above the pubes answering in position, in size, and in shape, to the tumor expected to be found there, might make an important error in diagnosis. The urinary difficulties, the extreme pain and tension in the pelvis, and other symptoms, however, attract attention, and point out that there is something about the case very unusual at all events. A vaginal examination would at once enable us to explain the nature of the condition.

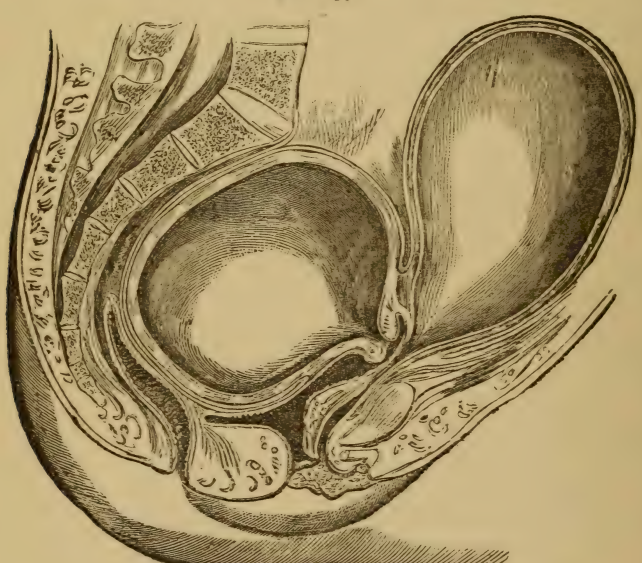
Lastly must be considered those cases in which *extra-uterine pregnancy* is present. These cases are not very common, but the symptoms observed under such circumstances are generally such as to occasion more or less obscurity in the diagnosis. The more common case is that known as Fallopian pregnancy, the fœtus being enclosed in one of the Fallopian tubes. The less common case is that in which the fœtus is developed in the abdominal cavity. The tumor presented to the touch in such cases may be situated in the middle line, but usually it is to one side. There is little in the tumor itself which is characteristic or which would enable us to distinguish between it and normal pregnancy, unless the nature of the case were suspected, and special care taken. The accompanying symptoms are, however, usually peculiar, and to these we must look for aid in the diagnosis. It more frequently happens that one of the terminations of this abnormal pregnancy has arrived before the diagnosis has been made out. The terminations are various. Thus the fœtus may grow to its full development, then die and remain in the abdomen, or it may burst from the cavity in which it is enclosed (whether the Fallopian tube or a cyst) into the abdomen, before arriving at full development, occasioning in the latter case often frightful hæmorrhage and sudden death. Or the death of the mother not ensuing, the fœtus becomes encysted and remains enclosed in the abdominal cavity. It may there remain for many years, giving rise to no particular inconvenience; or, after a variable time, a process of suppuration may be set up, in the course of which the remains of the fœtus are expelled, through a fistulous opening either in the abdominal walls, the intestinal canal, or the bladder.

A woman, the subject of extra-uterine pregnancy, may present no symptoms of an unusual character up to a considerably advanced period of gestation. Such may, however, set in at a much earlier period, and this depends partly on the location of the fœtus. The symptom which in some cases first attracts attention is, that the patient, though supposed to be pregnant, has what she considers to be a catamenial discharge.

* The case is more fully reported in the *Lancet*, vol. ii., p. 369, 1862.
† *Lancet*, vol. i., Feb. 21, 1863.

Discharges occurring in a pregnant woman should lead us to investigate the case more particularly. One of the most frequently observed symptoms in extra-uterine pregnancy is pain of a dragging, sharp character in the pelvic region, the abdomen being often also tender to the touch. Yet there is nothing very significant in such symptoms, for patients who are the subjects of normal pregnancy not uncommonly present symptoms such as those which have been described. And if the patient be examined *per vaginam*, we usually find the os uteri presenting characters such as are in normal pregnancy. The use of the sound would of course inform us whether the uterine cavity were empty or not; but there is this difficulty in the use of the sound in the diagnosis, that it is only safe to

FIG. 237.



use it when we are absolutely sure that the uterus does not contain an ovum. Practically, the sound is of little service in the diagnosis.

State of the Skin covering the Abdomen, and Condition of the Umbilicus.—Various peculiarities in the condition of the skin covering the abdomen, and of the umbilicus, have diagnostic significance and value.

The most important peculiarity in question is a change observed in the greater number of cases of pregnancy. There is found "a colored line of about a quarter of an inch in breadth, extending generally from the pubes to the umbilicus, but not unfrequently thence to the ensiform cartilage; its hue is some shade of brown, but sometimes partaking of the yellowish tint of ochre, and sometimes amounting to a full-bodied dark amber" (Montgomery). Around the umbilicus, too, a dark-colored disk

is often found, which Dr. Montgomery terms the "umbilical areola." The two may, and often do, exist together, but the umbilical areola is considered by Dr. Montgomery as of higher value as a positive indication of pregnancy than the dark abdominal line. These changes in the skin above and round the umbilicus are not found in all cases of pregnancy; they are not found equally developed in different individuals at the same period of pregnancy; they are most marked in dark women; they are less to be depended upon as diagnostic of a second than of a first pregnancy. The observer must be cautioned, however, that until he has actually acquainted himself with the nature of the discoloration due to pregnancy, by inspection of some few undoubted cases, he will not be in a position to make use of this means of diagnosis.

Auscultation of the Abdomen.—In the employment of auscultation we have a means of diagnosis, in cases of suspected pregnancy, of the greatest possible value and importance. Every student of medicine should diligently prepare himself for making use of this means of diagnosis by practicing it on all occasions.

It is now necessary to give an account of the sounds heard on auscultation of the abdomen—(1) under ordinary circumstances; (2) when pregnancy is present; to indicate the value of the latter as diagnostic of pregnancy; and to point out how, and what, fallacies are likely to be encountered.

The stethoscope should be preferred to the application of the ear directly to the abdominal parietes. The abdomen must be quite uncovered, though a practiced observer may allow a very thin handkerchief to be interposed, if it appear advisable. The patient must be lying down, and the abdominal walls relaxed by instructing her to draw up the knees. The observer, standing on the patient's right side, holds the stethoscope with the left hand, grasping it firmly close to the end which is to be applied to the abdomen. The stethoscope is then firmly, gently, but steadily pressed inward over the spot to be examined, and there maintained while the ear is applied. When the abdomen is tight, it will often be impossible to hear the fœtal heart unless these precautions are attended to; and, indeed, it is sometimes necessary to press the end of the stethoscope inward a considerable distance, to obtain the desired result. This is particularly the case when there is a tolerable quantity of liquor amnii in the uterus, when there is any fluid in the abdomen covering the tumor to be explored, when intestines are interposed, or when the walls of the abdomen are unduly loaded with fat. Unless the stethoscope be held as directed, it is apt to roll about over the surface of the uterine tumor. The employment of sudden force is very objectionable: the pressure of the stethoscope inward, when necessary, should be slow and gradual. The examination must be conducted in a quiet room.

The sounds which may be heard on applying the stethoscope to the abdomen of a woman who is not pregnant may be confounded with those due specially to pregnancy, and *vice versâ*. The sounds coming under the first head are—(*a*) Sounds produced by passage of flatus from one part of the intestines to another; (*b*) sounds due to pulsation of the heart; (*c*) sounds due to pulsation of great vessels in abdomen, in aneurisms of the abdomen, etc.; (*d*) sounds due to respiration. Now, respecting the sounds due to motion of flatus, etc., within the intestines, a very little practice will prepare the observer to at once recognize them. Respecting the sounds due to pulsation of the heart, some important facts are to be remembered. It has been occasionally found that the beats of

the mother's heart were quite audible very low down in the abdomen, and there are cases on record in which, the heart beating with unusual rapidity—*e.g.*, 120–130—and heard about the neighborhood of the umbilicus, these pulsations have been mistaken for those of the fœtal heart. This shows the necessity for counting the pulse of the patient before employing auscultation. The sounds proceeding from the great vessels, etc., of the abdomen will not be described just now, as they will be more fully considered presently. Lastly, the sounds produced by the respiration of the patient are in rare instances transmitted to that part of the abdomen likely to be examined in cases of suspected pregnancy.

Next, as to the sounds heard in cases of pregnancy. These are—(*a*) Sounds produced by pulsation of the fœtal heart; (*b*) the placental or uterine souffle; (*c*) sounds due to pulsation in the funis accidentally pressed upon—funic *souffle*; (*d*) sounds due to the movements of the fœtus. Each of these requires a separate description.

(*a*) *Sounds of Fœtal Heart.*—If the patient be advanced in pregnancy, to the seventh or eighth month, and the circumstances of the case are ordinary ones, the fœtal heart is usually heard to beat over a space comprising three or four square inches of the abdominal surface, this spot being situated to the left of the umbilicus and a little below this point. If heard at the very earliest moment at which it is audible, the stethoscope would be applied in the middle line just above the os pubis; as pregnancy advances, the point of maximum intensity of heart's beat would travel upward, and to the left. Generally speaking, when pregnancy is far advanced, the fœtus lies with its head downward, its back to the left side, and it is through the back of the fœtus, which is made by pressure of the stethoscope to come into contact with the uterine wall, and the latter with the abdominal wall, that the fœtal heart-beat has to be conducted, in order to reach the ear of the observer. If the fœtus be differently placed in the uterus, if the back be turned to the right side—the next most common circumstance—then the heart-beat is heard below and to the right of the umbilicus. And if the fœtus be so placed that the breech is lowest in the pelvis, the heart-beat is heard to the right or left of the umbilicus, according to circumstance, but *above* it—that is to say, supposing the pregnancy to be pretty far advanced. At the period when the uterus lies to one side of the abdomen, the situation at which the fœtal heart is heard will be correspondingly modified.

The sound heard by means of the stethoscope is like that of the heart of a child in miniature—it is a double sound, or rather a succession of a pair of sounds, the one rapidly following the other. They have "generally received the familiar name of tic-tacs, from their resemblance to the sounds of a watch" (Montgomery). It is scarcely possible to mistake this peculiar sound for anything else, and *vice versâ*: the sound is one *per se*. Its force and intensity are liable to variation; thus, it is very weak and feeble when first heard, and acquires strength as pregnancy advances. But the *rapidity* of the fœtal heart-beat, the fœtus being healthy, remains almost constantly the same up to the time when labor has fully set in; and this fact has been established by the observations of several eminent obstetric auscultators. The average rate of the fœtal pulsation, according to Hüter,* who has made 1195 observations on the subject, is 132. In 10 per cent of his cases it amounted to 144, in 83 per cent to 132, in 7 per cent to 120, and the higher figure was due to the presence of a dis-

* "Monatsschrift für Geburtsk." Sup. vol. for 1861.

turbing element—movements of the fœtus—in most of the cases. It may here be mentioned that in practice it is found very convenient to follow the method of Schwartz in counting the fœtal pulse—that is to say, to reckon the number of beats in *five* successive seconds, instead of the ordinary method of counting the number of beats in fifteen seconds. Thus, the ordinary fœtal heart-beat is 11 for five seconds, mounting to 12 and descending to 10 in exceptional cases. The statement of Montgomery is, that the pulsations "vary in number from 120 to 160; but the limits are in general between 130 and 150." This does not really differ from the figures given more recently by Hüter. The rate of frequency is affected by certain circumstances, as previous observers had noticed; but Hüter gives more precise indications on this point. His general results are, that ordinarily fluctuations in the maternal have no effect on the fœtal pulse; that when the mother is the subject of severe inflammatory disease, the fœtal pulse may be permanently increased in frequency; that movements of the fœtus always accelerate the fœtal pulse, this elevation being transitory. Frankenhäuser broached the theory, that the frequency varies according to the sex of the fœtus—that the fœtal pulse has a low average when the fœtus is of the male sex, and a high average when of the female sex; the average number for males being 124, the average for females 144. The truth of these conclusions has been tested separately and independently by Breslau, Hennig, Haake, and Steinbach, whose observations, made on an extensive scale, do not confirm the theory in question. Many circumstances are capable of modifying the frequency of the fœtal heart-beat; and even if Frankenhäuser's theory should prove on the whole to be correct, this would vitiate the results obtainable in particular cases.*

Next, as regards the period of pregnancy at which the fœtal heart may be heard. Practically, it is a sign of pregnancy which may be ordinarily detected in the *fifth month*. If the observer be experienced, and if circumstances be favorable, it may be heard earlier than this. Depaul heard it as early as eleven weeks and four days after conception—that is, near the end of the fourth month. After it has been once heard in a particular case, it should be possible to hear it up to the end of pregnancy. Hüter states that he has never failed to hear the fœtal heart in the sixth month, unless in cases when the fœtus has proved to be dead. Depaul and Jacquemier failed to hear the fœtal heart in only eight cases out of 906, and in six of these the fœtus proved to be dead.

With respect to the value of the sound of the fœtal heart as a sign of pregnancy, it is at once the surest and the best sign available; and to an observer experienced in obstetric auscultation, and knowing the fallacies to be avoided, it is an absolutely sure sign of pregnancy. But the absence of the sound, or inability to hear it is not always a proof that the woman is not pregnant. The fœtus may be dead. The value of the observation in this particular will entirely depend on the skill of the observer. In a case where a difficulty is found in hearing the sound, it is well to seek for a hard part of the tumor, and to apply the stethoscope over that point; and again let it be stated, practice will do much to remove difficulty of this kind. If the abdomen evidently contain fluid in addition to the tumor we suspect to be the pregnant uterus, care must be taken to apply the stethoscope on the tumor. If the quantity of liquor amnii be much larger than usual, we

* The observations on this interesting subject, and above referred to, will be found in the volumes of the "Monatsschr. für Geburtsk" for the years 1859, 1860, 1861.

may be able to hear the fœtal heart only after careful and prolonged search, and then very faintly. The fœtal heart-beat, when heard, is a positive sign of pregnancy; when it is not heard, we have to make our diagnosis of pregnancy on other grounds.

(*b*) *The Uterine Souffle.*—This is a sound synchronous with the mother's pulse, and varying, as the mother's pulse, in frequency. It is ordinarily, and very accurately, compared to the sound produced by blowing gently over the mouth of a wide-mouthed bottle; still more closely it resembles the sound heard in the large arteries of the body, when these are at all subject to pressure. The uterine souffle is heard more generally in one or other of the inguinal regions, at an advanced stage of pregnancy—most commonly, according to Montgomery, at the situation of the right Fallopian tube. It is, however, variable in position, and may be heard in rare cases as high as the fundus of the uterus. Generally, the surface over which it can be heard is limited to a space a few inches in diameter. It is not always to be heard; thus, Naegele found it absent in 20 out of 600 cases. Whether produced in, or by means of, the uterus in a gravid state, it is capable of being closely simulated under conditions altogether different. It may be detected at a somewhat earlier period of pregnancy than the sound of the fœtal heart. As regards the value of the uterine souffle as a positive sign of pregnancy dependence can only be placed upon it when the observer is well-skilled.

(*c*) *The Funic Souffle.*—In rare cases, the funis lying over a solid part of the fœtus, and being interposed between it and the stethoscope, a souffle is heard, double, and having the frequency of the fœtal heart-beat. This, which is Kennedy's explanation of the matter, is the one more generally received. The sign has little practical value, as it is so rarely and so accidentally heard.

(*d*) *Sound produced by Fœtal Movements.*—This sound, as a sign of pregnancy, has received some attention from the fact that Naegele, its discoverer, ascertained that it could be heard first at a very early period of pregnancy—in the third month—before other auscultatory signs are available, and indeed before other signs, some more, some less important, are discoverable. Depaul, who has written an almost exhaustive work on fœtal auscultation, confirms Naegele's views. The sound in question is a slight dull sound, accompanied by a slight or sudden impulse or jerk, and it is the sound of the movement which can be felt by the fingers, as before described (see p. 528). Depaul heard the sound in question in nine out of twelve women who had not passed the twelfth week of gestation.

The value of the sign may be gathered from what has been stated. An experienced observer might thus obtain very early evidence of pregnancy. One not very well experienced in obstetric auscultation would pause and wait until more positive and reliable information could be procured before pronouncing a decided opinion.

Lastly, in respect to all the signs derivable from auscultation, it will have been gathered from what has been said that it is the fœtal heart-sound, and that alone, in which any confidence can be placed in the diagnosis of ordinary cases. Unless the observer be very acute, auscultation is of no service when the woman has not passed the thirteenth or fourteenth week. Four months passed, auscultation becomes of the highest practical value.

OTHER CONFIRMATORY SIGNS OF PREGNANCY.

ALTERATIONS IN THE COLOR OF THE VAGINA.—A very remarkable alteration in the color of the lining membrane of the vagina is usually observed in *women who are pregnant;* and the presence of the alteration in question is a valuable sign of gravidity.

For a knowledge of this sign of pregnancy we are indebted to Kluge and Jacquemier. The statements of these observers have received confirmation from extended observations on the subject made by Montgomery.* The shade of color presented by the vaginal mucous membrane is a *livid, dusky hue*, "altogether different from the shade of color seen in ordinary vascular congestion, even when intense, or in cases where there are varicose veins," and it is not capable of being simulated by any other congestion. The alteration in color affects the mucous membrane at the inside of the nymphæ near the orifice of the urethra and the clitoris, and becomes more marked as we ascend toward the upper end of the vagina and os uteri. The alteration is thus most evident in the latter situations. It is seen in patches, not being uniformly diffused. Hæmorrhoids will not produce this color of the vagina. Dr. Montgomery had not seen an instance in which it was clearly visible within the first two months; it was frequently not developed until the fourth or fifth, and was sometimes hardly perceptible at all; but he had not seen a single instance in which its perfect condition, as observed in healthy pregnancy, was simulated in any other state of the system.†

The absence of the dusky, livid hue in question is thus not indicative absolutely of absence of pregnancy, but its presence, when well marked, appears to be a sure sign of pregnancy; and one moreover, which may be available at a very early period of gestation.

CONDITION OF THE BREASTS.—The examination of the breasts furnishes us with very important data for the diagnosis of certain conditions or diseases. In cases of suspected pregnancy, the appearances presented by these organs offer not rarely decisive evidence for or against the supposition, as the case may be; provided always that the observer be experienced in the matter, and has so familiarized himself with the usual appearances and changes in these organs produced by pregnancy as to be able to distinguish them, and to assign a due value to the particular changes noticeable in the case under examination. Such familiarity can only be acquired by practice and careful observation.

The changes observable in the breasts may be considered under the following heads: Alterations in the size and texture of the breasts, and alterations visible to the eye only.

1. *Alterations in Size and Texture.*—A simple swelling of the breasts is not in any way to be depended upon as a sign of pregnancy. As a rule, the breasts increase in size during pregnancy, and they begin to increase in size usually at a very early period; but many other causes may produce a like increase in the size of the glands. The increase in size may be due simply to *fat*. The breasts when thus increased in size are more pendulous in appearance, and, what is more important, are much softer to the feel than in cases of pregnancy. The increase in size is evidently due to deposit of a soft, cushiony, elastic material (fat) in and around the glands, and beneath the skin covering them. Enlargement of the breasts

* "Signs and Symptons of Pregnancy," 2d ed., p. 239.
† Loc. cit., p. 244.

due to pregnancy conveys to the touch a sensation of hard, knotty, tolerably well-defined masses (the lobules of the glands) felt beneath the skin, these being arranged symmetrically around the common centre. The normal anatomy of the mammary gland must be known, or the observer will fail to appreciate to the full the characters now alluded to. In the simply fatty breast the enlargement is chiefly constituted by a soft, uniform structure; the lobules of the glands may still be recognizable to the touch, but they are small in proportion to what is observed under other circumstances. An increase in the size of the breasts due to fat is likely to be observed in women at the climacteric period; and the fact that the menses are irregular or absent, that the breasts are painful, while at the same time the abdomen is noticed to be larger, often induce women at this age to believe themselves pregnant.

Enlargement of the breasts is sometimes a consequence simply of marriage; the glands become tumefied, painful, and more knotty than usual, and, in point of fact, the changes observed somewhat resemble those in pregnancy. The swelling is, however, temporary; after a few days it subsides, or, if it continue, no further changes are observed in the skin around the nipples, such as will be presently described as associated with pregnancy. A slight enlargement of the breasts is frequently present at the catamenial periods under ordinary circumstances; here the breasts return to their normal state during the catamenial interval. Temporary suppression of the menses is very generally associated with mammary enlargement.

Any condition resulting in distension of the uterus may occasion swelling of the breasts. The presence of ovarian tumors is frequently associated with enlargement of the breasts.

It does not always happen that when the patient is pregnant the breasts become enlarged. Thus neither positively nor negatively does the sign in question give reliable information.

2. *Changes in the Nipple.*—One principal alteration in the nipple visible to the eye, and consequent on pregnancy, is a slight increase in its size. It is more tinged and vascular, it is rather darker than previously,* and toward the end of pregnancy the color may become very dark, approximating to that of the skin around. The apex of the nipple during the latter half of pregnancy is usually more or less scaly in appearance, due to the fact that a slight exudation has been going on, on the drying up of which little scales are left behind. The most important diagnostic fact connected with the nipple is the possibility or not of squeezing from it a secretion. The precise value of this latter sign must now be particularly examined.

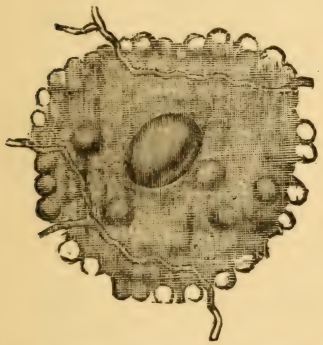
In order to ascertain in a given case whether a secretion be actually present or not, it is necessary to manipulate in a peculiar manner, too familiar to need description. The secretion is thus pressed outward from the recesses of the gland, and exudes at the orifices of the ducts on the nipple. The human milk is a serous-looking fluid, almost transparent, and unlike the milk of cows. A secretion of milk in the breasts is a valuable sign, but by no means a certain sign, of pregnancy. Cases are on record in which girls have had such a secretion quite unconnected with pregnancy. Montgomery refers to three very well-marked cases of this kind: in one case, that of Baudelocque's, it was observed in a little girl aged eight years only. Again, women advanced in life sometimes exhibit

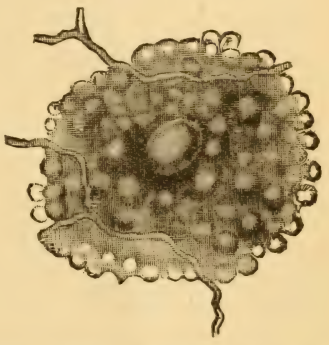
* ". . . crassescit papilla, inflata videtur, color ejusdem fit obscurior, simili colore distinguitur discus ambiens." Rœderer, "Elem. Art. Obst."

this secreting power in the breasts; and this is not astonishing, when we find it indisputably proved that, under certain circumstances, the breasts of individuals of the male sex have been known to secrete a fluid to all intents and purposes identical with milk. Next, it is to be observed that women who have once borne one or more children not unfrequently continue to secrete milk for a very considerable time—for many years in some instances; and hence, if a woman has had children, milk in the breasts has very little value as a sign of pregnancy. Dr. Tanner found milk indicative of pregnancy as early as the ninth or tenth week, and he considers a secretion containing, on microscopic examination, the characteristic milk globules, with large oil particles and colostrum granules, as an early and reliable sign of pregnancy in a woman who has never given birth to a child.*

3. *Changes in the Areola.*—The changes observable in the areola are of very great importance. William Hunter, and more recently Montgomery

FIG. 238.† FIG. 239.‡





and Earle, have attached a great degree of value to these changes as a sign of pregnancy. Around the nipple there is a narrow band of integument of a delicate texture, resembling pretty nearly the surface of the nipple itself. This circular band is of variable width in different cases; it is the areola. When pregnancy occurs, the areola becomes larger, altered in color, presents on its surface certain eminences not before observable —not observable to such a degree at all events—and it becomes altered in some other particulars. The value of these areolar changes is unquestionable, but it appears from observations and from facts which have come under my notice that the areola may, apart from the existence of pregnancy, undergo, in women indulging in sexual intercourse, changes which resemble very closely those due to pregnancy.

One change observed, and to which Montgomery has specially directed attention, "is a soft moist state of the integument, which appears a little raised above the surrounding skin, and in a state of turgescence." § This

* *Op. cit.*, p. 63.
† Fig. 238, after Montgomery, shows areola at third month.
‡ Fig. 239, from Montgomery, shows areola at seven months.
§ *Op. cit.*, p. 105.

change is observable as early as the end of the second month. It is of more diagnostic value in the case of primiparæ.

The deepening of the *color* of the areola is the one which has been the best known. The degree of the change in the color varies in different subjects. In light-haired women it may be slight, but in dark-haired women it is often very striking and intense, the areola in such cases presenting an almost complete blackness at the end of pregnancy. During the first two months little alteration of color is evident, but in the third month the tint becomes perceptibly darker in most cases. In the fifth month it is ordinarily decided, and from this time to the end of pregnancy the tint deepens. In Montgomery's work will be found some beautiful and accurate pictorial representations of the areola at the third, fifth, seventh, and ninth months respectively; the areola of an albino is also depicted. A dark-colored areola is by itself, and in a woman who has had children, more especially if she be of dark complexion, not of great value as diagnostic of pregnancy. In conjunction with other changes it has great value.

The *size* of the areola varies in different persons. The areola may be only a quarter of an inch broad, or it may have a diameter of as much as three inches. When it is very dark it is usually very large also. The point to be observed is *increase* in the width of the areola; "... discus ambiens, qui in latitudinem majorem expanditur" (Rœderer); and this is, other signs agreeing therewith, indicative of pregnancy. As the pregnancy advances the width of the areola increases. The areola may in rare cases be found at the end of pregnancy not more than a quarter of an inch broad; absence of a wide areola is therefore not a positive sign that pregnancy is absent.

The Areolar Glands or Follicles.—The most important, the most characteristic, and the most universal of the changes observable in the areola, and due to pregnancy, consists in the formation of little glandular eminences projecting from the surface of the integument covering the areola, not unlike the head of a pin in size and shape, well described by Rœderer in his celebrated work in the following terms: "Discus ambiens ... parvisque eminentiis, quasi totidem papillulis, tegitur." These little eminences have been termed miniature nipples; Morgagni detected lactiferous tubes going to each of the little tubercles in question, and the milky fluid, it has been stated, has been observed to issue from them under favorable circumstances. The little eminences now under consideration begin to show themselves as early as the end of the second month of pregnancy; they subsequently increase in number, and also in size. They are more thickly placed close to the nipple; are usually from twelve to twenty in number; the elevations to which they give rise are perceptible to the eye and to the touch.

There is another point of some importance. The little eminences due to areolar glands often persist and do not disappear after pregnancy and suckling have come to an end. In one case I distinctly noticed areolar glands well marked, when the lady had not had a child or given suck for five years. The mere presence of these areolar glands cannot therefore, I believe, be relied on as a sign of pregnancy in a woman who has had children. As a sign recognizable at a very early period, as a sign which we find most constantly of all, the presence and *growth under observation* of the areolar glands or follicles is, however, of the greatest practical assistance in the diagnosis of pregnancy.

Secondary Areola.—This term is applied to a change in the areola of a

peculiar character. At the fifth month, not earlier, according to Montgomery's experience, are observed "numerous round spots or small mottled patches of a whitish color scattered over the outer part of the areola, and for about an inch or more all round presenting an appearance as if the color had been discharged by a shower of drops falling on the part."* As pregnancy advances, these appearances are intensified. Montgomery's opinion was that these appearances are quite distinctive, "exclusively resulting from pregnancy."

To sum up these remarks on the characteristic changes in the areola—we have increase in size, change of color, development of areolar glands, presence of secondary areola, moist puffy state of the integument. If the case before us be one of pregnancy, we shall find these changes in association with each other; some will be found more marked than others in different cases.

Other Changes in the Breasts visible to the Eye.—In cases of pregnancy the veins running beneath the skin become more visible than usual. Another change to which reference must be made is presence of little cracks in the integument, giving rise to formation of narrow sinuous white lines radiating irregularly from the centre of the breasts, and produced by the tension and stretching of the skin. These lines are a sign of pregnancy, if the patient have never conceived or given suck, and if the enlargement of the breasts before us is evidently not due to fat; but under other circumstances it is valueless, and may mislead.

General Value of Changes in the Breast as Diagnostic of Pregnancy.—These signs, taken as a whole, should, in reference to the diagnosis of the case before us, be considered side by side with other signs of pregnancy before we proceed to pronounce a positive opinion. In cases of pregnancy the symptoms march onward with a certain amount of regularity, and if one sign be present another should be also. Thus, if in the case before us we find what we consider to be a perfect instance of the pregnancy areola of about the fifth month of gestation, there should be at this time a tumor discoverable in the abdomen; failing to find a tumor, we should at once conclude further investigation of the case to be necessary. The mistakes which have been committed in the diagnosis of pregnancy will on inquiry be generally found to have resulted from the observer attaching an undue importance to some one sign on which he has been accustomed to rely, and from his having omitted to ascertain the presence or absence of other, perhaps more important, signs of pregnancy.

Absence of Menstruation.—This, though a most important sign of pregnancy, is far from being a positive one. (See chapter on Amenorrhœa.)

Quickening.—It is well known that, at a certain period of pregnancy, the patient usually experiences a peculiar sensation in the abdomen in the region of the uterus, due, as is almost generally admitted, to the actual movements of the fœtus within the uterus, and that the sensation in question usually continues to be felt by the patient until delivery has taken place. Popularly, the time at which the sensation in question is first perceived is termed the period of *quickening*, it being believed, although this belief is of course unfounded, that the fœtus only then begins to have a separate and distinct life of its own. Quickening—that is to say, of the sensations supposed to be due to motions of the child—is considered by women in general as complete proof of pregnancy; and

* *Op. cit.*, p. 108.

cases are not at all uncommon in which, in the face of facts demonstrative of the impossibility of pregnancy being present, women continue to imagine that they are with child, led away by their reliance on this supposed infallible sign of pregnancy.

It will be well to consider, in the first place, the nature and character of the sensations conveyed to the mother, and produced by the pregnant condition of the uterus, and, in the next place, other conditions which may give rise to sensations capable of simulating these.

The sensation termed "quickening" is experienced by a pregnant woman usually at the end of four calendar months from the date of conception (Hamilton); or "between the end of the twelfth and sixteenth week after conception, or, adopting another mode of calculation, between the fourteenth and eighteenth week after the last menstruation" (Montgomery). It is sometimes felt at an earlier period than this, in very rare cases in the tenth week from conception; and in some cases it is not perceived until a considerably later period. So far respecting the time at which it occurs. The phenomena of quickening are described by Dr. Montgomery as follows: "Under ordinary circumstances, when quickening does occur, but especially if it happens in conjunction with the sudden ascent of the uterus out of the pelvis, the woman is apt to feel an unusual degree of nervous agitation, which not unfrequently ends in faintness, or even complete syncope, after which she is sensible of a slight fluttering sensation, which from day to day becomes more distinct, until she fully recognizes the motions of the child."*

There has always been some difference of opinion as to the cause of the sensation termed quickening. Thus it has been considered by some to be due to the ascent of the womb into the abdomen, by others to the first peristaltic contractions of the newly organized uterine muscular fibres (Dr. Tyler Smith); and the seat of the sensation has even been held to be in the abdominal parietes. The more general idea is that the sensation is due to the actual motions of the child.

This difference of opinion as to the cause and nature of quickening appears to depend on the fact that the phenomena witnessed in different cases, and termed "quickening," are in reality not always identical; and the term must be considered a composite one, meaning, in one case, the alteration in position of the uterus due to its increasing size; in another, the actual sensation of the child's movements; in a third, possible contraction of the uterine muscular fibres alone. This distinction has not been sufficiently insisted upon. It is very certain that by women in general the term quickening is not held to mean exclusively and always the sensation of the motion of the child: they often mean by the expression a particular attack of faintness, which may not be followed by the experiencing of actual sensation of motion of the child for some very considerable time afterward.

After the period at which quickening is usually observed has passed by, the patient being pregnant, the motions of the child become more and more evident, and the sensations described by the mother are plainly and unmistakably due to the active motions of the fœtus *in utero*. Whatever doubts may exist as to the actual nature and seat of the first sensations experienced, there can be none as to their cause at a later period. The sensations attributable to the motion of the fœtus are now peculiar in regard to their suddenness, abruptness, and distinctness. At first the

* *Op. cit.*, p. 146, 2d ed.

sensation experienced is that of "a slight pat or throb, sometimes scarcely more than a flutter," sometimes a tickling or tremulous motion, resembling that produced by a little bird when held in the hand (Montgomery); but later the motions give rise to sensations more distinct and intense.

The motions of the fœtus are not regular, and are not regularly produced by the operation of the same causes. All women do not experience these sensations equally. In some cases all sensation of the motion of the child has been absent from the beginning to the end of pregnancy; in other cases the motions are violent, to such an extent that patients consult us in order to obtain relief from the annoyance and inconvenience they occasion; they sometimes, toward the end of pregnancy especially, occur so uninterruptedly as to prevent the patient from sleeping; and there is usually some one position in which the patient is more particularly liable to be troubled with them.

The observation of Hamilton should always be borne in mind, that "no woman ever yet fancied herself pregnant without also persuading herself that she felt the motions of the child."

In women with *abdominal tumors*, sensations of movement are sometimes present; in cases of ovarian tumor, an irregular pulsatile sensation is sometimes perceived, due, probably, to the pulsations of the aorta or of the great vessels lying behind and pressed upon by the tumors in question. Where the uterus is distended by retention of menstrual fluid, by the ovum in a condition of hydatidiform degeneration, or otherwise, and sensations like those due to motions of a child are present, the cause of the same is probably the contraction of the uterine muscular fibres. Dr. Montgomery relates three cases in which these anomalous sensations of motion were due to "hydatid pregnancy." The sensation was different from that experienced in ordinary pregnancy, and was described as a peculiar crawling or sliding sensation.

Comparative Estimate of the Value of Different Signs of Pregnancy.—Perfect evidence of the existence of pregnancy is not obtainable until after the third month, unless in those very rare cases where the fœtal heart may be heard just at the end of this time. The evidence obtainable before this date only enables us to come to the conclusion that pregnancy is *probable*. The signs (probable ones) of pregnancy up to this time are—suppression of the menses, swelling of the breasts, descent of the lower part of the uterus in the pelvis, flattening of the abdomen.* An examination will not usually enable us to give a positive opinion, if undertaken at this time.

After the end of the third month, during the fourth and fifth, an abdominal and a vaginal examination give, or may give, decisive indications. Menstruation is still absent in ordinary cases; the breasts continue to enlarge, and the areolar changes become developed; the os uteri undergoes its characteristic changes; the uterus can be felt to be enlarged from the vagina and above the pubes; the vagina assumes a dusky hue; the motions of the fœtus can be felt by the observer and by the patient; ballottement is recognizable; the sounds of the fœtal heart can be heard.

After the fifth month and up to the end of pregnancy the symptoms just described *continue* and become intensified.

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* This flattening of the abdomen was reckoned by the older authorities as an early sign of pregnancy.

"En ventre plat
Enfant il y a."

Thus ran the old proverb. Montgomery, *op. cit.*, p. 157.

The signs of pregnancy have been divided into three classes by Montgomery—(1) Presumptive; (2) probable; (3) unequivocal. Practically, however, there is no great difference between what is presumptive and what is probable; and if distinctions are to be drawn between shades of belief, the division might be extended *ad infinitum*. It appears quite sufficient to arrange these signs under two classes—(1) the certain, and (2) the probable, signs of pregnancy.

1. The *certain signs of pregnancy* are—

The active movements of the child unequivocally felt by another;

The presence of the child *in utero* ascertained by ballottement;

The sounds produced by the pulsations of the fœtal heart.

A positive opinion may be expressed if any one of these be distinctly observed, the observer being one experienced in such inquiries, and aware of certain possible sources of fallacy. These latter have been described in the proper place. On the other hand, no positive opinion can be expressed if none of these signs be discoverable, however strongly the observer may feel inclined on other grounds to give his final decision. And as caution should be exercised in this particular, so also caution is necessary in giving an opinion that pregnancy is not present unless the negative evidence be very decisive.

2. *The probable signs of pregnancy* need not be enumerated. They include all those not included under the first head, and to each of them this remark more or less applies—that their value as probable signs of pregnancy is exceedingly different in different cases and at different times; the circumstances of the case may elevate one of these probable signs into the position of a certain one, so far as that case is concerned, but this particular sign may be valueless in the next instance.

D.

STERILITY.

General Remarks—Signs of Virility in the Man.

Causes of Sterility in the Woman.—1. Mechanical Causes; Condition of Hymen, of Ostium Vaginæ, of Vagina, Presence of Tumors, etc., interfering with Sexual Intercourse; Spasm of Vagina; Conditions of the Uterus, Imperfect Development, Polypi, Flexions, Narrowness of the Uterine Canal, Chronic Inflammation: Diseases of the Ovaries; Altered Conditions of the Fallopian Tubes; Ill-timed Intercourse; Masturbation, Follicular Disease of Vulva; Disease of Rectum. —2. Abnormal Condition of the Secretions; Leucorrhœa, etc.—3. Constitutional or General Causes; Sexual Frigidity; Overfeeding and Luxurious Habits; Obesity; Syphilis.

There is hardly any pathological condition of the generative organs of the female which may not, directly or indirectly, have to do with sterility; hence, success in the diagnosis of the cause of sterility involves a wide and comprehensive view of the subject.

The only practical method of treating the subject of the diagnosis of the causes of sterility is to state definitely and systematically what are

the possible causes. The following list of these possible causes has been made out chiefly on the basis of facts actually observed and recorded.

The question which naturally first occurs to us in ascertaining the cause of the sterility is: To whom is the infertility to be attributed—the woman or the man?

In some cases, although the testes are apparently sound, the secretion itself is deficient in fertilizing power.* If the husband be in good health, and have lived temperately, the power of impregnating often exists up to a very advanced period of life; but in those who have, from an early period of life, been addicted to excesses, the sexual power may fail prematurely. In cases of the latter kind, inquiries will readily show the nature of the deficiency.

Causes of Sterility in Women.

The first point to which our inquiries tend is as to the patency of the canals through which the spermatic fluid and the ovule must pass in order to come into contact. The vagina, the uterus, the Fallopian tubes, must offer no impediment, or sterility is inevitable.

We may consider the causes of sterility in the woman under the following heads: 1. Mechanical causes; abnormal condition of some part of the generative passages, such as to interfere with the proper transit of the spermatic fluid or of the ovules. 2. Abnormal conditions of the secretions of the generative passages. 3. Constitutional and general causes.

1. MECHANICAL CAUSES OF STERILITY.

(*a*) *Abnormal Conditions of the Hymen.*—This membrane is sometimes dense and firm, and effectual intercourse is prevented. Cases in which this condition is met with usually come under our notice owing to a complaint on the part of the husband that intercourse cannot be effected satisfactorily. In some such cases we find on inquiry that the menstrual flow proceeds regularly and without much apparent disturbance; the hymen is not quite complete, but is perforated at one or more points sufficiently to allow of the passing of the menstrual fluid, but not sufficiently so to allow of perfect intercourse. In such cases, sterility generally, but *not always*, exists; for it has been found in cases very well authenticated, some of which may indeed be found in Mauriceau,† not to cite authorities much more recent, that a nearly perfect hymen does not necessarily prevent fecundation. In some of these cases the hymen has been found so dense and firm at the final termination of pregnancy, as actually to impede parturition. Thus the menstrual phenomena may be present, and yet the hymen may be imperforate in a certain degree. In another class of cases the woman has never menstruated, and the hymen is found complete, absolutely preventing the escape of the menstrual secretion. In some rare cases the hymen is imperforate, but is at

* Mr. Curling contends that in the man an inaptitude to impregnate may coexist with the capacity for sexual intercourse—that, in fact, the man is subject to *sterility* independently of virility. The microscope has been occasionally employed with the view of ascertaining the presence or absence of spermatozoa in the seminal secretion, and it is asserted that they have been found absent in some cases of sterility. (See Dr. Marion-Sims's important work on Sterility.) Recent observations appear to show that sterility is more often due to imperfect constitution of the semen than was formerly supposed.

† "Maladies des Femmes."

the same time yielding, so much so, indeed, as to allow of ordinary intercourse. A case in which the hymen is absolutely imperforate generally arrests attention from the fact that the menstrual flow has never been observed, and in the case of married women, the aid of the practitioner is more frequently called in for this reason than because of the sterility with which it is also associated. The physical examination will always and readily demonstrate the nature of the impediment to fecundation which exists in both of these important classes of cases.

(*b*) *Narrowness or Partial Closure of Ostium Vaginæ or Vaginal Canal.*—The vagina is in rare instances *partially closed* at different parts of its course by bands constituting partial strictures of the canal, and rendering intercourse difficult or incomplete, and so leading to sterility. Such a condition of the canal may be congenital, or it may be brought about in consequence of previous difficult parturition, laceration and cicatrization of the torn part leading to contraction, and to partial, or even complete, closure of the canal. The strictures thus resulting may be low down, at the position of the hymen, or higher up near the os uteri.

(*c*) Or the vagina may be *altogether absent*, or constituted by a small *cul de sac*, barely admitting the point of the finger. This condition may be congenital, or may be produced by difficult labor, laceration of the walls of the canal having been followed by cicatrization and contraction of the same. In the congenital variety, menstruation is absent because of the usually associated absence or defective development of the uterus; in the acquired variety, menstruation may or may not be absent according as the canal is completely closed or not. The canal may be large enough to allow of menstruation occurring, but too small to admit of sexual intercourse, and consequently of impregnation.

(*d*) *Tumors, etc., interfering with Sexual Intercourse.*—The aperture of the ostium vaginæ being natural in point of size, sterility may exist because of a tumor or growth filling up the canal, or so situated as to interfere with efficient sexual intercourse. An *enlarged clitoris* has been known to have this result.

The canal of the vagina may be occupied by a growth interfering in like manner with intercourse. *Hypertrophy of the cervix uteri* forming a conical tumor sometimes of considerable size, *polypus of the uterus* hanging down into the vagina, or *prolapsus* of the uterus itself, may in particular cases give rise to sterility.

(*e*) *Spasmodic Affection of the Ostium Vaginæ—Vaginal Spasm—Vaginismus.*—This condition has until recently had hardly a sufficiently prominent place assigned to it in the list of causes of sterility. Its relation to sterility is a very important one. It has excited the attention of Debout, Michon, Marion-Sims, and others. The affection has been described in some of the older established text-books. The spasmodic contraction is induced or aggravated by attempts at sexual intercourse. Owing to the extreme sensibility of the parts in the first, and to the mechanical closure of the canal in the second place, sexual intercourse is almost or quite impossible, and there is consequently sterility. The nature of the affection has been discussed in a previous chapter.

(*f*) *Condition of the Uterus.—Absence or imperfect development of the uterus* is a cause of sterility the existence of which is only to be substantiated by an internal examination. (See Examination of the Vagina.) There is a class of cases which comes under the present category, and which is very interesting from a practical point of view,—viz., that in which the cervix uteri, or rather the vaginal portion of the cervix,

is small and somewhat infantile in character. the opening being also small. In many such cases infertility has been observed, and has been remedied by simply incising the os uteri, and thus enlarging the aperture.

Infertility is by no means a necessary consequence of absence of the catamenia. It has been repeatedly proved that women may conceive who have never menstruated; and if it became a question whether marriage was allowable in a particular case, the simple absence of this function could not be considered as *definitively* against the propriety of such a procedure, unless that absence were accompanied by other and more essential sexual deficiencies.

The other conditions on the part of the uterus which may cause sterility will next be enumerated. First are to be considered those cases in which the cavity of the uterus is occupied by tumors—*polypi* of the uterus. The presence of a polypus, even of a somewhat considerable size, in the uterus, does not necessarily produce sterility. *Fibroid tumors of the uterus* are effectual both in the production of abortion and in the actual prevention of impregnation. Out of sixty-nine cases of fibroid tumor recorded by Scanzoni, thirty-five had never conceived. According to my own experience, fibroid tumors generally altogether prevent conception.

Chronic hypertrophy of the uterus, variously termed, also chronic inflammation of the uterus, "chronic infarctus," is a condition unfavorable to fecundity. Scanzoni attributes the sterility of prostitutes to the existence of this alteration. This condition is generally accompanied with congestion and undue fulness of the neighboring blood-vessels, alike unfavorable to healthy ovulation and to the normal development of the ovum within the uterus.

The form of atresia produced by *flexions of the uterus* is, I believe, by far the most common cause of sterility. This subject has been fully considered in the chapters on Flexions and Dysmenorrhœa. The flexion produces sterility because it prevents the passage of the seminal fluid into the interior of the uterus. The cause of dysmenorrhœa and of sterility is often the same. The frequency with which anteflexion of the uterus is associated with sterility is very great.

The *uterine cervical canal* may be *comparatively very narrow*, the seat of the constriction being either at the upper extremity of the cervical canal, where it joins the body of the uterus, or lower down at the os uteri. And there may be *congenital closure* of the canal at the positions indicated. In cases in which there is actual closure of the canal, the os uteri being imperforate, menstruation is of course absent, and there may be menstrual retention. In cases where there is an opening, but a small one, the symptoms are, speaking in general terms, those of dysmenorrhœa. The opening is often small, owing to flexion and consequent compression; but when the os is drawn down, and the canal straightened, the sound enters readily enough.

Conical, or Flexed, or Elongated Condition of the Vaginal Portion.—Dr. Marion-Sims insists, and I believe correctly, on the influence exerted by an abnormal condition of the canal at its lower portion in the production of sterility. The vaginal portion is sometimes too long, and when this is the case it has a tendency to become curved. This curvature (of the portion of the canal within the vagina, be it understood) is sometimes so great that the long tapering cervix is almost doubled on itself. (See chapters on Flexions.) The patency of the canal is thus seriously interfered with, and it is important to bear in mind that dysmenorrhœa is

not necessarily associated with flexion of the canal at this point. The vaginal portion should have a certain length, shape, and direction, and a deviation in either of these particulars may lead to sterility.

Valvular Closure of the Os.—This condition arises when one of the lips of the os uteri is considerably larger than the other. The os has then a crescentic shape, and the orifice is virtually less than it should be. Sterility may be associated with it.

The os uteri sometimes *becomes closed*, and sterility arises in consequence of the opposite sides of the canal becoming adherent after being torn. This is now and then a consequence of labor. In some cases it has been produced by the incautious or improper use of caustics.

Chronic inflammation and induration of the cervix of the uterus are causes of sterility; the opposite sides of the os are hard, firm, and the opening actually very small, although it may appear to be large. The canal is frequently distorted, and the opposite sides actually touching each other. The sound enters readily, but there is nevertheless less patency of the canal than there should be.

In cases of *dysmenorrhœa* attended with expulsion of a membranous structure at each menstrual period, sterility is very generally observed. (See Dysmenorrhœa.)

(*g*) *Diseases of the Ovaries.—Cystic or other tumors of the ovary* prevent conception in many cases where menstruation is still present; but the existence of disease in one ovary, or removal of one ovary by operation, is not incompatible with the occurrence of pregnancy. Disease of the ovaries interferes with the fecundity of a woman, when the due secretion of ovules does not occur, and consequently either no ovules, or ovules in a morbid condition, are conveyed into the Fallopian tubes, in which case, however, menstruation would be expected to be absent, or at all events much disturbed; or when the pressure of large tumors of the ovaries dislocates the uterus, and so disarranges the natural relations of this organ as to prevent both the passage of the ovule downward and the entrance of the spermatozoa into the uterus.

(*h*) *Altered conditions of the Fallopian tubes* may prevent the passage of the ovule into the uterus. Peritonitis occasionally produces such *adhesions of the peritoneum covering the pelvic organs* as to render it physically impossible for the ovaries to be grasped by the fimbriated extremities of the Fallopian tubes; thus the "ovipont" cannot take place. *Atresia*, or closure of the canal, is a condition sometimes met with—a condition of course fatal to impregnation of the ovules from the corresponding ovary. This condition may be combined with *dropsy of the Fallopian tubes*. Fibroid tumors of the uterus occasionally produce occlusion of the Fallopian tubes.

(*i*) Here may be mentioned a possible cause of sterility, important to bear in mind—*ill-timed sexual intercourse*. It is the fact that women have a much greater aptitude to conceive immediately after the cessation of the menstrual flow, and this, therefore, is the most favorable time for sexual intercourse. It is related that Catherine de Médicis, wife of Henry II. of France, became pregnant after having been sterile for many years, apparently in consequence of following the advice of the physician Fernel, that sexual intercourse should only take place at the time in question.* It may turn out on inquiry in particular cases of sterility, that it has been the custom to act in ignorance of this fact.

* Montgomery, *op. cit.*, p. 479.

(*k*) Under the next head may be included a number of causes occasionally, but by no means necessarily, leading to abortion. Thus, cases in which *masturbation* is practiced, cases in which sexual intercourse is allowed to take place *too frequently*, cases in which the vulvar aperture is the seat of disease, as in *follicular inflammation of the vulva*, are those coming under this category most deserving of mention. *Diseases of the rectum* have been known to be associated with sterility.

2. ABNORMAL CONDITIONS OF THE SECRETIONS OF THE GENERATIVE PASSAGES.

Leucorrhœa.—Under ordinary healthy conditions, contact with the secretions of the mucous membrane lining the cervix, the uterus, and the vagina, does not at all impair the vigor and activity of the spermatozoa, in which the power of fertilization resides; but the secretions may be so altered as to materially affect the activity of the spermatozoa, so as to prevent mechanically, by their viscidity aud tenacity (Dr. Tyler Smith), the passage of these bodies into the cavity of the uterus. The vaginal secretion is naturally acid, the cervical mucus is naturally alkaline; the healthy degree of acidity and alkalinity respectively is not hurtful to the spermatozoa; but it has been shown experimentally that, if the vaginal mucus be too acid, or the cervical mucus be too alkaline, the spermatozoa subjected to the direct influence of these secretions quickly lose their power of motion. The relations of leucorrhœa to sterility have been fully discussed by some late observers, by Dr. Whitehead,* Dr. Tyler Smith,† and Dr. Marion-Sims ‡ in particular; and each of these authors cites numerous cases of sterility associated with leucorrhœa, and in which there would seem to be little doubt that the influence of the leucorrhœa in producing the sterility was due, in great part, to the existence of this morbid condition of the secretions.

3. CONSTITUTIONAL AND GENERAL CAUSES OF STERILITY.

One of the conditions here to be mentioned is *sexual frigidity*—a want of inclination for sexual intercourse. There can be no question that the connection of this frigidity of temperament with sterility has been much overrated. Women conceive and bear children who evince little or no sexual inclination. This condition is only *necessarily* associated with sterility when the generative apparatus is deficient and imperfectly developed; and no positive deduction can be drawn from such disinclination as to the incompetency of the woman to conceive.

When great *general debility* and *anæmia* are present, it is often the case that conception does not occur. The ovarian function suffers in common with the functions of the body generally, and the woman is not apt to the procreation of children. With anæmia disorder of the menstrual functions frequently, as is well known, coexists; the cases are few in which, menstruation being present, the sterility is dependent on the anæmia.

Another condition, the opposite of that in anæmia, is more often the cause of sterility—that, namely, produced by *over-feeding* and *luxurious habits*. It is matter of common observation that the laboring classes,

* "On Abortion and Sterility." † "On Leucorrhœa." ‡ "On Sterility."

amongst whom destitution frequently prevails, are prolific in a degree not witnessed in the higher ranks of society. "It is," said the late Dr. Marshall Hall, "incontrovertibly proved by Mr. Sadler, in his work on the 'Law of Population,' that the fecundity of the human race is diminished by the indolent and luxurious mode of life prevalent among the rich, while it is augmented by the laboring habits and spare diet of the poor . . . the proportionate infecundity of the two being, in general terms, as six to one."*

In women who are *unusually fat* an inaptitude to conceive is often observed.

Syphilis.—It is well known that the presence of syphilitic disease in either parent is frequently the cause of abortion or of premature birth. It may be questioned, however, whether the presence of syphilis is not occasionally the cause of sterility by destroying the product of conception at so early a period of the pregnancy that the very existence of pregnancy is for that reason unrecognized—the woman being really capable of conceiving, but the product of conception quickly perishing. The effect of syphilitic disease in disturbing the normal growth of the decidua at the commencement of pregnancy has hardly been, as yet, the subject of attention; but it is quite possible that disease of the decidua of a syphilitic character may come hereafter to be a recognized pathological condition. Facts which have come under my own observation have led me to suspect that syphilis may give rise to the effect here alluded to.

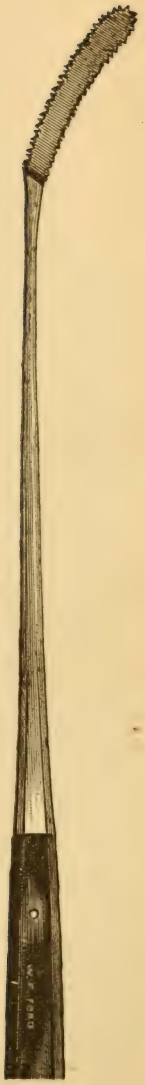
Conclusion.—In endeavoring to ascertain the cause of the sterility, it will be necessary for the observer carefully to examine into the history and antecedents of the patient, the manner in which menstruation is performed, and the general condition of the bodily health. Further, it will generally be necessary to examine the vagina and the external generative organs, and, if no cause for the sterility be there found, to examine the uterus. In carrying out the examination of the parts in question, the eye and the touch are both to be employed. In investigating the condition of the uterus, the speculum and the uterine sound, one or both, are required.

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* "On Constitutional Diseases of Female," 1830, p. 7.

ERRATUM.

This wood-cut of Dr. Cleveland's saw should have been inserted on page 422, vol. i., but was left out by some oversight, so I give it here, rather than let it remain out until the next edition of this work.



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